The Builder.

Vol. XL. No. 1988. Saturday, March 12, 1881.

ILLUSTRATIONS.

The Herts Convalescent Home (Plan, 306).—Mr. Thomas Chatfeild Clarke, Architect 308
The Berlin Town Hall (Double-page Engraving).—Baumeister Wasemann, Architect 310
Wesleyan Chapel, Queen's-road, Wandsworth-road.—Mr. James Weir, Architect 313
Altar-table, St. Bridget's Church, Wavertree, Liverpool 315

CONTENTS.

The Industrial Arts in Italy 296
Royal Academy Lectures on Architecture, 1881. By Professor G. E. Street, R.A. 296
The General Exhibition of Water-Colours, Egyptian Hall 301
The Payment of Sanitary Rates by Landlords and Tenants 301
The Audiphone 302
Agriculture and Railway Transport 303
Subways and Improvements in London 303
Cost per Mile of the Railway to Candahar 303
State of Building in Small Towns and Villages 303
The Berlin Town Hall 304
Hertfordshire Convalescent Home 304
Wesleyan Chapel, Queen's-road, Wandsworth-road 304
Altar-Table, St. Bridget's Church, Wavertree 304
Architecture among the Mountains 317
Architects' Benevolent Society 317
Extension of the Principles of Design of the Great Pyramid to Second and Third Pyramids 318
Obituary 318
David Young's Patent Ball Valve 318
The Participation by the Workmen in the Profits of Enterprise 318
Architects' Actions: Paraire v. Leibl 318
Cheap Churches 319
Ashburnham House 321
St. Stephen's, Walbrook 321
Edinburgh 323
Electric Lighting in Rooms: Liverpool Engineering Society 323
Archæology at Cambridge 323
Surveyorship Items 323
Architectural Societies 324
The Sanitary Movement 324
The Copyhold Commission 324
Ventilation and Warming 324
A Position for Small-Pox Hospitals 325
Ventilation, Chimney-Draught, and Smoky Chimneys 325
The Frost and Boiler Explosions 325
District Surveyors' Fees in the City 325
Competition Committees 325
Caution 325
"Covering the Royal Exchange" 325
A Norwegian Timber Contract: Bennett v. J. A. Kjellberijan Sever 325
St. Paul's Ecclesiological Society 325
Books: Burdett's Cottage Hospitals (Churchill) 325
Miscellanea 325

The Industrial Arts in Italy.

THE development and even renovation of what we now understand as the industrial arts, the declining condition of which, in the middle of this century, roused the attention of the thoughtful, are obvious enough. The emulation of international exhibitions; education in schools, technical, industrial, and artistic; the innumerable lectures; the still greater activity in this direction shown by the press; and the efforts made by the great producers have borne results which it is impossible for the most sceptical to disregard. Every country has taken a share in the movement, a fact the truth of which any of the recent great international exhibitions has afforded ample proof. England, France, Germany, Belgium, and America have rivalled each other in the contest. Alone Italy, if not the fatherland, long looked upon as the brilliant home, of the decorative arts, has been backward in the race. This fact cannot fail to have struck any observer who has watched, within the last few years, the movement of the industrial arts at home and abroad. Had he, however, any doubt on the question, it is calculated to be removed, we think, by the judgment of an impartial Italian critic, who has lately expressed his sense of mortification at the sadly backward state of the industrial arts in his own country.

We not long since laid before our readers a summary of a communication made by the Prince Baldassare Odescalchi to the Mayor of Rome on the state of architecture in Italy; in a further letter* to that official, Prince Odescalchi has set forth in a similarly unbiassed manner the condition of the industrial arts in Italy.

Prince Odescalchi is, we presume, speaking more particularly of his own country when he says, in connexion with certain exhibitions, that if every hope is justified in the present success and brilliant future of the arts of sculpture and painting from the power that always lies before their professors of the study of nature, in turning to the industrial arts all such hope is destroyed. From their intimate connexion with architecture in their dependence on certain conventionalities of form, line, and ornament, the state of the industrial arts will be found almost exactly to correspond with that of contemporary architecture. The archæological study of the present day is, to a great extent, founded on an architectural basis; it is almost invariably by the existence of some either actual architectural form, or one of architectonic origin, observed on an object, that its age and style are recognised. This intimate connexion of the industrial arts with architecture laid down, we have only to recall how mournful was the tone of Prince Odescalchi concerning the state of architecture in Italy to see at once the conclusion he is about to draw on the condition of the industrial arts in the peninsula.

To raise these sisters from their position a vigorous effort is necessary, and according to the writer, the methods which have produced the revival to be noticed in the rest of the civilised world are to be seen in active operation everywhere but in Italy. The critic proceeds to upbraid, in the first place, the general indifference of the Italian public in all artistic matters; then the equal want of activity in this direction on the part of the most important of all the great moving powers of the present day,—the press; and finally, the unsympathetic action of the Government, actuated, apparently, solely by a bureaucratic routine or a selfish search for office.

To regenerate the industrial arts there is, as truly remarks Prince Odescalchi,—who is not merely a complainer, but a suggester of remedies,—only one method, that is, to urge the study and imitation, and eventually the emulation, of the best types of the productions of the great centuries of art. This is the path that the most civilised nations of the world have so far followed, and in this manner commenced the industrial "renaissance" now to be observed everywhere. To attain this, the study of old examples is absolutely necessary,—examples shown in well-classified collections and museums placed entirely at the disposition of the public; the formation of rationally-organised schools furnished with models of the principal types of the ornament of the most conspicuous epochs of art; and, finally, these studies should be accompanied by a system of oral instruction in the history of decorative art. Instead of this, there exists, in Italy, a number of small museums gathered, in some cases, by municipal initiative; in others, through the generosity of some local benefactor. But these museums rarely succeed in showing more than the poverty of the collection, through an imperfect organisation, not unfrequently owing to the incapacity of the director. Never, remarks Prince Odescalchi, have I met in Italy with collections presented by the State or purchased by Act of Parliament, such as will be found in all civilised countries. Again, instead of preserving jealously the finest specimens of our industrial art, we have sold them abroad; they have gone to enrich foreign collections, the very museums through the influence of which have been renovated their industrial arts. Prince Odescalchi acknowledges no feeling of jealousy, but rather one of pride, in seeing the great works of the art of the old Italian masters prized as the treasures of foreign museums and as models in foreign schools, but he cannot resist deploring deeply that wealthy private individuals, or the provincial or city municipalities, do not think of purchasing something for the glory of the nation, for the instruction of those who may be desirous to study and to work. This, and not the restrictive severity of inefficacious laws prohibiting the export of objects of art, Prince Odescalchi sees would be the wisest course for Italy to pursue to preserve the specimens of its great artistic industry.

The noble art of the potter, the origin and development of which are ultimately connected with the civilisation of the human race from its first commencement, and in which Italy in past centuries held such a high position, is taken by the writer as a glaring example of the truth of his desponding view of the state of the industrial arts in Italy. After the triumphs of the Etruscan, the Italo-Greek, and the Roman potters, the artists who learnt from the Arabs the delicate secrets of majolica, were to found a branch of industrial art which, in the hands of masters such as Orazio Fontana, Xante, and Avelli, and their contemporaries, was to render the productions of Gubbio, of Faenza, of Urbino, of Castel Durante, the *lustro*-ed majolica of Maestro Giorgio, works prized in their day, and down to the present, by the cultivated as among the greatest treasures of the industrial art of the busy past. Well, remarks Prince Odescalchi, after recalling these glorious traditions, "in the matter of majolica, in Italy we now possess one collection* left by Correr to the city of Venice. This is certainly an important gathering of specimens, but it is only of one style, and nothing is ever done to enrich or complete the collection. In the 'Museo del Bargello' at Florence, the few specimens of majolica exhibited are placed there by private individuals on loan, and at any moment some rich amateur or some enterprising dealer may pay the high price required for them by their owners, and then they will disappear from Italy; so that if one day the art of the ceramist is revived in our country," remarks the critic, "we shall have to send abroad our artists to study the works of our ancestors, in the possession of the South Kensington Museum, the British Museum, the Louvre, the Cluny, and Sèvres."

It will be remembered, perhaps, how, some years since, the Japanese commenced to purchase back from Europe the fine specimens of their old ceramic masters which had left the country, in order that they might not be deprived of models to guide their modern ceramists. While our critic expresses his feeling at the injustice of placing any restriction on the export of works of old art from his country, he, however, would wish certain limits to be placed on this liberty. It was, he tells us, with no small amount of shame that he saw transferred to the Museum of the Louvre a whole doorway of a palace from Cremona, a superb fifteenth-century work which, all artistic visitors to Paris will remember, forms one of the most characteristic features of the new Renaissance Court of the Louvre. Prince Odescalchi might have further referred to the Italian doorway,—like its fellow at Paris, wrenched from its Italian home,—which graces the entrance to the Grosvenor Gallery; this additional instance would have even further strengthened his somewhat alarmist view of Italy "liquidating" her architectural antiquities on the ground that, with our scientific progress, we may expect some day to see a whole palace transported in the American fashion across the Alps. We heard, indeed, not long since, of an enterprising Parisian dealer purchasing an old château somewhere in France, and positively sending it piecemeal by rail to Paris, where he was prepared to sell it either "wholesale" or "retail," by which latter more profitable method, if we mistake not, he recouped himself for his,—in more sense of the word than one,—original venture.

---

* Published in the *Opinione* of the 15th of February, 1881.

* Lodged, with the other treasures of the "Museo Correr," in the Fondaco dei Turchi, one of the restored antiquities of Venice that, it is sincerely to be regretted, the action of the "Preservation Society" was not able to save.

While we certainly cannot sympathise with, we may excuse, the Parisian dealer in his vandalism, though there are other means more fitting of preserving the characteristic works of past ages. A recent visit to Verona suggested to us on what easy terms could be secured a whole palace, with a choice of its being fifteenth, sixteenth, or seventeenth century, and how admirably such a residence would be adapted for an English nursery for any of those many ideas such as occupy so much of our thoughts in the present day,—a nursery, for instance, for archæology, that luxurious study of the history of the past which slowly but surely supplies us with such invaluable lessons. Many an old palace in Italy, especially in Northern Italy, is suitable (say) for the home of some architectural school where travelling students could find quarters and matter for study either for a short or lengthened period.

A proper respect for the monuments of the past which serve as models for our study, apart from their historical interest, their due preservation from wilful injury and ruin the effects of time, cannot certainly be considered too great a strain on the debt of gratitude that we owe to our ancestors. This pious duty, however, it would appear, is too often neglected in Italy, if we are to judge by the report of Prince Odescalchi,—which, unfortunately, agrees with the experience of any one who has travelled in the peninsula. Thus the "Castello di Federigo II." in Puglia,—it is to the Mediæval citadel of Lucera, near Foggia, we presume, our critic is referring,—has been left to fall slowly to a ruin which no lover of the picturesque can excuse. But, whatever may be the feelings of those who hear of the state of neglect into which has fallen the home of the great and learned Ghibelline emperor, who, let it be remembered, married the daughter of our King John, we can imagine a very much more general and genuine expression of surprise on the part of many readers at hearing of the condition into which has been allowed to fall the once brilliant palace of the Dukes of Urbino, desecrated as the official residence of a humble "sotto-prefetto," the walls covered with French wall-papers in the worst possible taste, the once delicately decorated rooms of the duchesses strewn with the ledgers, the papers, and litter of a municipal office, while the children have been allowed to coarsely scrawl their ribaldry over the staircase and the few busts that still remain. Prince Odescalchi is laconic in his picture, but it sufficiently brings the reality before any one who knows the appearance of a modern Italian *municipio*, almost invariably installed in some cruelly-restored old palace; in the prefect's apartment the plaster bust of King Umberto and, perhaps, of the queen; in some cases even an oleograph portrait scarcely distinguishable from the one or two other (in this case) painted representations of respectable citizens; the French clock; the gaudy chairs and curtains. That the superb Renaissance palace of the refined Montefeltro, whose home, decorated at the cunning hands of the exquisite artist, Francesco di Giorgio, was famed throughout Italy—the Italy of the sixteenth century—as an architectural marvel; that the palace where met such a brilliant society of artists and men of letters as that gathered at Urbino round the refined Duke Frederick, should be so desecrated as it is, show how justified are the accusations of those who tax the modern Italians with a culpable indifference to the noblest traditions of their history.

In speaking of the restorations at St. Mark's, Prince Odescalchi fully endorses the views of those who would wish these restorations to be confined to a strict work of conservation, nor is allusion neglected to the justified protest from abroad at the injury already done to the old Church.

If not partaking of such an "international" character as it seems agreed that buildings like St. Mark's must be regarded, it will be none the less painful to many who are familiar with the tombs of the Scaligers at Verona to hear that these have been recently scraped and "restored" in the most approved modern Italian style; while the delicate frescoes at Assisi have not, it would seem, escaped the action of experimentalisers, who have been endeavouring by chemical means to brighten,—as if that were necessary,—the colours of the exquisite work of Giotto and his brother artists and pupils!

ROYAL ACADEMY LECTURES ON ARCHITECTURE, 1881.*

BY PROFESSOR G. E. STREET, R.A.

Thirteenth Century Architecture: Italy.

I HAVE brought you so far on the path of development in my last lecture, that we find ourselves at the end of the reign of the round-arched styles. It is natural, even in treating on Pointed architecture, to take Italy before any other country, not because the history of Gothic architecture is seen and studied better there than elsewhere, but because it was from that time for many centuries a sort of central region in all questions of art. We shall find, indeed, as we go into the question, that, so far from taking a leading part in the development of Pointed art, Italy was always lagging behind,—that she produced no very good or original work, and that for some of her best buildings she was indebted to foreigners. Nevertheless, in few countries is there more to interest us. The state of art was not unlike what it is with us. No one style held undisputed sway. There were foreign influences at work which introduced strange novelties into a large part of the country. The extensive seaboard; the mercantile character of the people, and their unmatched situation at the centre of all commerce and of the then chief lines of traffic; the independent and warlike character of the Republics,—among which Venice, Amalfi, Genoa, Pisa, and Florence were the most active; the habit inherited from their ancestors of borrowing rather than inventing,—all added to the varieties of style seen in their buildings, and to the development by degrees of local peculiarities.

Just before the period we are dealing with, Italy had been torn and distracted from one end to the other by foreign princes or foreign invaders, by intestine troubles and constant wars. In the eleventh century the Greek Emperor still had his *Capitan* at Bari, on the east coast. The country was harassed by Saracen inroads, and was relieved and then occupied by adventurous Normans, and the German emperors were holding a great part of the land. The era itself is as distinguished for the personages it produced as for the troubles among which they led their lives. The Swabian Frederick II. stands out, not only as a central figure in the history, but equally as one of the most lavish promoters of building of palaces, of castles, of churches, and even of mosques; and the artists by whom the time was glorified are, as we shall see, innumerable, whilst their status was much more like what it is with us than it was elsewhere at the same time. On all sides, from the earliest period, we meet with the names of the architects and sculptors whose works still remain, and are able to trace them working,—now here, now there. Their names are recorded in countless inscriptions,—not only in documents, in which Italy is so rich,—but on churches over their doorways, on pulpits, on friezes, on monuments, on columns, and on baldachins. The architecture, instead of being that of the country or the province, seems, as we study it, to become that rather of the individual architects and their followers. Thus we have at a very early period the Maestri Comacine, freemasons with curious charters and privileges, whose head-quarters, on the island of Comacina, in Lake Como, gave them their name; the Campionesi of Campione, opposite Lugano, who from 1244,—when Anselmo da Campione contracted to work at Modena *in perpetuo* for 6 lire a day in summer and 5 lire in winter,—reigned, as it were, until the fifteenth century, having among them Enrico the first and second, and Giovanni the first and second; the Antelami of Parma, one of whom built the Baptistery in 1196; the Cosmati family, of Rome, who succeeded each other for about 150 years from A.D. 1150; and, finally, the clan of Masuccio, of Naples, among whom, as among the Campionesi, we have Masuccio the first, second, and third, always spoken of as if they were a succession of monarchs. The personal element, which always adds so much to the interest of artistic studies, is seldom absent, and it is because it is all but entirely so at the same period in most other countries that the study of Italian art in the thirteenth century is so interesting.

In my last lecture it was at the erection of the Cathedral of Pisa by a Greek architect, Boschetto, that I paused. His work has been too often talked of as if it were in any true sense Romanesque. It is, in fact, almost exactly what we might expect from a Greek, or from an Italian brought up in Greek traditions, who wished to conciliate popular taste by conforming to some extent to Italian customs. His plan was evidently founded upon the early Roman churches; it is cruciform, has transepts of great projection, and apsidal terminations to them as well as to the choir. But with a love of a Greek for the dome, he insists on retaining it, though he is bound by his basilican plan to carry his ranges of columns on from east to west, without any internal mark of the intersection of the transepts. It is in the plan only that any deference for Roman precedents is seen. His walls are all arcaded externally, the arches in the true Byzantine fashion, very thin and flat, and for ornament only. Under every arch there is a lozenge-shaped panel of coloured stone or marble. The spandrels over the arches are all inlaid with patterns of extremely elaborate character, and the sculpture of the foliage has everywhere the excellence of execution, the conventional symbols, and the variety of design so invariably seen in Byzantine work. This great church was finished at the end of the twelfth century. At the same time, all over the South and East of Italy, the same sort of style, produced by the same Eastern influence, was almost universally adopted. Observe, also, that it is one of the most singular facts in the story of our art, that over the whole of this district hardly any real or active influence was exercised by the pointed arch. It was used, it is true, but not universally, *e.g.*, at St. Maria, Aquila, in A.D. 1315; and at Bitonto, so late as 1335, we have buildings mainly constructed with circular arches, a fact hardly to be paralleled in any other part of Europe, though in Southern Italy any number of similar examples exist.

I have said thus much about Pisan art in the twelfth century because it was in Pisa that one of the central figures of the time was born and trained. This was Niccola Pisano, born about 1205. Not very much is known of him or of his origin; but that little is somewhat wonderful, if we are to credit the statement that already, when he was only about fifteen years old, Frederick II. made him his architect, and took him to Naples, where he was employed on the castle which Frederick was building there. Thence, at twenty-six, we find him going to Padua to build the great Church of Sant' Antonio; then to Arezzo, to build San Domenico. Then we find him developing his skill as a sculptor, executing pulpits for Pisa and Siena, and designing and, with the powerful aid of his son Giovanni, executing the great fountain at Perugia. I might fill in this chronicle of his work with many more details; but, short as it is, how interesting, is it not, to us? He has been brought up, as we see, in Pisa, in the presence of the Cathedral and of the Baptistery, and of the circular tower begun in 1174 and completed probably before his eyes. He studies it, and then, after a few years at Naples (where he was surrounded on all sides by art of the same sort, as at Benevento, at Salerno, Amalfi, and Caserta Vecchia), he goes to the North of Italy. He visits Venice, for his first great work, the Church of Sant' Antonio, is evidently founded on a study of St. Mark's. But he is a thoroughly eclectic artist, picking up ideas where he can, and adapting them to his own purpose. He thinks the group of domes at St. Mark's might be improved if they were loftier, and if one was in some way more striking than the rest. Then he recollects the great cone which covers the central portion of the circular Baptistery at Pisa, and, with striking effect, places it in the centre of his group of domes. Then he hears, no doubt, of the wonderful effect the French architects were producing by the beautiful plans of their *chevets*,—apses surrounded by aisles and chapels,—and determines to imitate them. I say he "hears," for it is inconceivable that, after having seen any of them, he should have planned anything so clumsy and ill-conceived as the *chevet* of Sant' Antonio, a succession of square chapels as badly designed as they well can be, and which yet, in the following century, seem to have been the model on which the never-completed choir of San Petronio, Bologna, was to have been founded. Then, on the exterior, the façade recalls the outlines of the Greek churches in the South, with which he was familiar; whilst on either side of the choir he builds with most picturesque effect octagonal towers or turrets, unlike anything in the South, and surpassing any of those which had been erected somewhat on the same lines before his time in Lombardy, and along the course of the Rhine. The whole effect of this great church is singularly Eastern,—more so even than that of its prototype. Thus grew this great church,—still perfect, but, in spite of all its interest, lacking somewhat of the impress of a really great architect's hand, and not fit to be compared for an instant with the far more refined and scientific churches which the French architects had been building during the fifty years before its foundation; but, nevertheless, remarkable for the beautiful grouping of the external outline,—a point seldom regarded by the early Italian architects. It was after the design had been made for this church that his best works, as a sculptor, were executed. And here, again, we find him distinctly incorporating figures and ideas which he derived from Roman sculptures preserved in Pisa. To these he added, no doubt, so much and such intelligent study from the life as to give great interest and pathos to his work, when compared with most of the Italian work that had immediately preceded it, though I am unable to admit that he was quite so much superior as is commonly asserted to the French sculptors of the same time, of whose names, and story, and training we know so little. His two great works, in which he shows us the skill of the architect and sculptor combined, are the pulpit in the Baptistery at Pisa, and the fountain at Perugia; and of about the same period is the purely architectural work of Santa Caterina at Pisa.

---

* Fourth lecture, delivered on Thursday, Feb. 24. (For previous lectures see pp. 202, 235, 265, *ante*.)

The Italian pulpits of this century are among the most magnificent relics left to us. The examples which led up to Niccola Pisano's work are of the type of Guido da Cosmo's at Pistoja, a square erection supported on columns resting on beasts, and with its sides covered with sculpture. Niccola followed the idea, but improved upon it. He made his pulpit hexagonal, and carried it on trefoiled arches resting on shafts supported on lions' backs. In this way he gave far more architectural character to his work than Guido da Cosmo had done; and not only is his sculpture better, it is the combination of the two arts that most strikes us, whilst the delicate taste with which coloured marbles are used to enhance the beauty of the design is remarkable. The sculpture itself you can study, I believe, at South Kensington. It shows a sense of the value of grouping, and of the natural treatment of emotions and actions, which under his Italian predecessors had been almost wholly neglected or despised. The type of figure which most affected him was not beautiful, and he always exaggerated extremely the size of his heads. But with any such criticisms as these one must admit, nevertheless, that his work paved the way for all that was most excellent in the men who came after him. He learned something, no doubt, from such a man as Giunto da Pisa, who was flourishing when he was young; and Cimabue and his successors were aiding with equal power and zeal the work that he was doing.

Niccola Pisano died in 1278, and in the six years before his death his name is connected with two of his most exquisite works. At Padua he had erected a great false front to Sant' Antonio, in which he sacrificed everything to breadth of effect. At Sta. Caterina, Pisa, in 1272, he has left us a façade which is still false, as being a great gable which has no sort of relation to the shape of the building behind it, but the beauty of which is incontestable. Its simple, unbroken outline gives the breadth of which Niccola was so fond. Its lower stage is very quietly arcaded; above this is an arcade of trefoiled pointed arches, carried on detached shafts, standing so free from the wall as to give most vigorous light and shade; and above this again, a circular window in the gable, flanked and surmounted by arcades like those below. For an architectural composition, taken by itself, I know few more charming works than this. The steep gable looks like the effort of a man who had seen the steep gables of Northern Gothic, and wished to vie with them in this respect as well as in the light and shade that Northern climates require, but with which Italian architects generally seem not to concern themselves. Here, as in other works, we can trace the influence under which he worked. The Leaning Tower stood within a few hundred yards of the spot on which he was building, and his arcaded front is a very simple development of the effect which he admired in the arcaded walls of the campanile,—Niccola's arches being pointed and cusped where those of the campanile are round, but otherwise being practically of precisely the same order of construction. Niccola's other great and crowning work is the great fountain at Perugia. You can hardly imagine a more charming work in every respect than this. It stands in an irregular piazza, midway between a cathedral of fair architectural interest, and is the vastest Gothic palace after Venice that I know. This, I suppose, was rising about the time that the fountain was erected, and at the same time the cathedral walls were being encrusted with a gay diaper of coloured marbles. The fountain consists of two enormous basins, the upper one supported by an apparently countless group of columns standing in the water which fills the lower one. The capitals and columns are of various shapes. The upper basin has figures at intervals all round, whilst the lower basin has a long series of square panels, separated from each other by clusters of moulded, chevroned, or spiral shafts. Out of the centre of the upper basin rises a smaller one of metal, out of which the fountain plays. The whole of the panels in this elaborate work are square, surrounded by mouldings, and Niccola Pisano showed his sculptor's sense in avoiding the common snare of introducing pointed arches for decoration where none are required. Covered as his work is with elaborate sculpture, what is most felt is the extreme order and simplicity of the whole; and when you go on to look in detail at the charming sculpture of saints and heroes and tutelars of the Church on the upper basin, and of the labours of the Months, the signs of the zodiac, the Arts and Sciences, Romulus and Remus, and I know not who besides, on the lower basin, and notice how refined are the attitudes of the figures, how delicate the features, and how completely the whole are wrought into one perfect piece of architecture, you must be blind indeed if you do not recognise the grand character of the art of this central figure of the century. It is true that the design is mainly what we owe to him, and that the execution of most of the sculpture was probably entrusted to his son Giovanni, and some, possibly, to Arnolfo di Lapo, but not the less is it a crowning work both of his life and of the century that he adorned.

I cannot leave Niccola Pisano without a few words about his son Giovanni. He, too, was a great artist. To my mind it is in his work as a sculptor that there is most to admire; but, like his father, he was both architect and sculptor. His two most important architectural works are the Chapel della Spina and the Campo Santo at Pisa; and I suppose there is little doubt that it was he who, with singular skill, converted the exterior of the Romanesque Baptistery in the same city into a most picturesque and graceful Gothic work by the addition of a crowd of traceries, pinnacles, and niches all round the base of its sombre dome. I suppose that all of you know the Spina Chapel. Before its too-wholesale restoration it was impossible not to love it for its eccentric beauty; but it was a beauty obtained in defiance of every law that, in my former lectures, I have told you to observe. There is hardly a stone in its exterior that can be said to be structurally true. The steepest gables ever seen are put up at the east end of a building with a roof of very moderate pitch; behind them are three spires, and then, all along the side walls, to conceal the flat roof, a whole range of niches, surmounted by pinnacles of a fashion dear to Italian architects, and very pretty,—where a statue is placed between four detached shafts which carry the crocketed finials of the canopy. In all the work of the Pisani, mistakes are made such as are never seen out of Italy. There is a most singular confusion of round and pointed arches. Their traceries, as we see them in the Campo Santo, are by no means well designed. They are indifferent about the subordination of orders in the tracery, and pack circles together as if they were entirely separate parts of the work, instead of combining them, as the Northern architects did, in perfect order, by means of continuous intersecting mouldings. Then their capitals seem always to be made with hardly any reference to the work they have to do. You have a large capital carrying a shrunken and insignificant archivolt. And this is the more remarkable because elsewhere, at the same time, one of the most marked features is the way in which every capital had its exact and separate function, to which its size was accurately adjusted. In good architecture this must be the case, and I am obliged to sum up the work of the Pisani by saying that, with all their merits as sculptors, they were not equally good architects; and that in planning, in construction, and in obedience to the prime law of making their ornament grow out of their structure, they sinned only too often; though at the same time the decided way in which Niccola at once threw aside the traditions in which he had been nursed is as remarkable as it is honourable to his artistic zeal and insight.

I have said so much about the Pisani because they so exactly fill the canvas in this century; but, widespread as their work was, it would be a mistake to suppose that a description of it has at all exhausted what has to be said on the subject of Italian Gothic. A most remarkable fact, indeed, is that, whilst they were building in the way I have described, there were rising three churches of quite different but most admirable character in every respect, one at Vercelli (1219-22), another at Assisi (1228-53), and, lastly, Genoa Cathedral, of which the date is not certain.

Vercelli was built, according to the tradition, by an English architect. I do not quite believe this, though undoubtedly its details suggest a foreign hand, and are admirably good. It is built of brick and stone, coursed; all the sections of piers and mouldings and the details of the vaulting are admirable, and none of the faults are committed of which the Pisani were guilty every day. The ground-plan is, in most respects, wholly unlike an Italian architect's work. The vaulting compartments of the aisles are square, and those of the nave oblong north and south, contrary to the Italian rule. The choir is square-ended, but the chapels of the transepts are apsidal. The detail of the clustered columns, with their capitals and bases; of the groining; of the windows, is all completely like French work, and very admirable, and the eastern triplet reminds me of England. It is only on the exterior, in fact, that any Italian character is given to the design; but even here there is far more attempt than is usually made to secure a picturesque *tout ensemble*. The west front is flanked by two lofty Italian towers or turrets. There is an octagonal central lantern, and, on the south side of the transept a campanile placed at an eccentric angle with the rest of the work. A fine cloister and a chapter-house make this church very complete. Its builder was a Cardinal Guala, who had been for some years Legate in England, and who erected this church on his return, having evidently a wish to emulate some of the work he had learned to admire in England and France. San Francesco, at Assisi, is even more remarkable. The architect here is said to have been a German; but the evidence of the mouldings is, on the whole, more in favour of his having been a Frenchman. The singular fact, however, is that, as at Vercelli, this influence did not affect the exterior, which is designed completely in the local style, of which I shall have more to say.

At Genoa, again, we have a work of extraordinary beauty, and so skilfully planned and designed that it is almost impossible to suppose that it can have been wholly invented by its architect. It is evidently a work which is the outcome of a series of developments, and yet not one of the steps which could lead up to such a work are to be found in the neighbourhood or in Italy. It is, again, the work of a man who, if not a French architect, had at least been trained in France, and is so good that it cannot be dismissed without a somewhat careful notice. In the first place, it is to be observed that it is entirely built of black and white marble (the black, a limestone from Lavagna, which is well bonded into the wall, and, indeed, forms its substance; whilst the white is from Carrara, and is used in thin slabs, 3½ in. thick, between the more solid courses of black), and that the system of using alternate courses of these two materials is carried here to the extremest point. This fashion was obtained, I have no doubt, by the Genoese from the East. You recollect what I told you in my last lecture about their wars and their commerce with Arabia and the East. And there is no fashion more noteworthy among the Arabian architects than this of the use of coloured materials in the way we see adopted at Genoa. Niccola Pisano and his followers had used a different system, and one which to me seems preferable. They used the two materials, but usually the black was in narrow bands on a field of white, placed where it aided by an emphatic line some architectural feature. This plan was adopted at Pisa, Lucca, and Siena. The Genoese adopted the more Eastern system of nearly equal courses of black and white. All their churches are built in this way, and from the simplest designs, such as that of San Matteo, Genoa, up to the extremely elaborate treatment of the detail in the cathedral, all agree in this; and so prized was the system that in course of time it became an aristocratic privilege in Genoa to build in this fashion, the four great families of the Fieschi, Doria, Spinola, and Grimaldi alone sharing it with the municipality. No doubt the churches were under the protection of some one of them, and the cathedral, probably, of the governing corporation of the city. Cathedrals in those days were sometimes strangely used. At Genoa, general assemblies of the people were held in the nave. Questions of peace and war were there settled by popular vote, and religious and political purposes seem equally to have been served by it. The nave was "renewed" in 1307, as an inscription tells us, but, I have no doubt, on the old lines. The west front and the western arch of the nave, with a groined gallery, are all of the first half of the thirteenth century. The architect,—whoever he was,—was bound by the black and white system of decorative construction. That, as we have seen, was a point of honour with his clients. He not only adopted the system of construction, but carried it on throughout his work by covering all the plain spaces between the shafts of his doorways with black patterns inlaid on white, and white on black, and in his arch mouldings he counterchanges the colours. The design for the front had three doorways, separated by buttresses. In order to show his decoration, the architect makes the jambs of his doorways simple splays, against which are set marble shafts,—three large and four small,—on each jamb. He leaves a good space between them, and on these spaces inlays an infinity of elaborate patterns. His bases are beautifully moulded, with foliage carved under them, and in the carving of the capitals, and of a Tree of Jesse on the jamb of the great doorway, we see the hand of a skilful sculptor, whose work is entirely different from anything that the Pisani were doing at the same time. The arch mouldings are all finely drawn, carved, and chevroned, and some of the marble shafts are spiral, and others carved. Above the central doorway there was the invariable Italian feature, a rose-window, and the design included apparently the equally French feature of two western steeples, of which one only was in part built. Had the whole been completed as it was begun, we should have had in it one of the most exquisite works of the century, and interesting, as it seems to me, beyond measure, from the evidence it affords of the natural fusion of two systems of architecture,—French, and Eastern or Arabian,—in a perfectly fine work. Whenever any of you have the opportunity of studying this work on the spot, I counsel you first of all to make yourselves acquainted with the two earliest doorways in the west front of Rouen Cathedral. There, in the most perfect French work, you will see how the Northern architect, having only one material,—and that stone,—nevertheless contrived to obtain the same effect of black patterns on a white ground by deeply-cut patterns in the stonework. And there is so much analogy between the two works that I am disposed to think that the architect of Genoa had seen the work at Rouen before he designed, in a somewhat similar spirit, his great work at Genoa. I ought to have added that his nave arcades are carried upon circular columns, which, with the arches above, are all built of alternate courses of black and white; and that a second arcade, opening to the aisle, takes the place of a triforium. Perhaps it is too ingenious to suggest that the architect of the nave of Rouen had adopted the same singular device; and though his work was later in date than the two doors, it was no doubt earlier than the nave of Genoa.

Another very decorative front of about the same period, which ought not to be forgotten, for it is equally unique in its way, is that of the cathedral at Ferrara. I have been unable to learn anything as to its history. It is an alteration of and an addition to an older façade, carried up high above the roofs in three great equal gables, arcaded and enriched with great boldness and beauty on every portion. In the central division an elaborate porch of two stages in height projects boldly from the front. This is gabled on three sides, and has a sculpture of the Last Judgment scattered about in its upper compartments. I hardly know any front in Europe on which so much work has been lavished, and though it is impossible that it should be otherwise than very striking and interesting, it is impossible to regard it as a piece of genuine work or construction. It is a front put on against the church, with no sort of connexion with it in outline or design. It depends not on good proportions, but on extraordinary richness of detail for its effect. Its architect was not satisfied to leave a stone unadorned throughout the whole upper part of the building. His windows and arcades are crowded with shafts; the mouldings are rich and effective; and yet, beautiful as the work is, it has the character of an imported design, and there are no other buildings in the country which lead up naturally to it.

I hardly like to omit all mention of the cathedral at Ancona. Here, on the very edge of a country almost given up to Byzantine work, Margheritone of Arezzo is said to have built the front of the cathedral—a charming composition, with a projecting porch carried on detached shafts, a rose-window above, and a very steep gable to the porch and to the front. This is soon seen to be altogether a false arrangement. The design, if not seen in perspective, is very beautiful and well proportioned. The gables have all stepped corbel-tables, and the whole effect is surprisingly unlike any common Italian work; and yet the masonry was done by an Italian hand and no other. The doorway has an array of eight detached shafts set against a splay, as at Genoa. The shafts are alternately large and small; some of red marble, some of white, some spiral, and some octagonal; and the base is made of red and white marble and grey granite. The section of this jamb is like that of the west doorway at Genoa. All these works have some features in common which are not usually met with in Italian Gothic. These are the use of clustered columns, as at Vercelli and Genoa; clustered piers, as in the doorways at Ancona and Genoa, each shaft in which carries on its own capital a well-defined member of the arch; the use of buttresses, which at Vercelli are of considerable dimensions, and at Genoa are marked features,—a rare occurrence, the Italian buttress being usually a mere pilaster round which a heavy cornice at the top of the wall is returned. Finally, the mouldings are good in the sense in which the best French mouldings are good. They are well drawn, have good light and shade, and are accurately fitted to their places. In all these respects these buildings are entirely unlike the work of Niccola Pisano, and, in my opinion, far more refined than it is. Moreover, there is no flavour whatever of the revived Classicalism which was always evident in his work, and the effect of light and shade, which is striven for and obtained, is quite refreshing in the midst of the platitudes (if I may so call them) of the Italians.

The conclusion at which you may arrive from what I have been saying will be, perhaps, that the less indigenous Gothic architecture is in Italy, the more beautiful it is. To a certain extent this is true, but to a certain extent only. There are other effects obtained by the Italians which well deserve admiration, and in every one of the buildings just restored it is to a part only, not to the whole, that it is possible to refer in terms of unmixed praise.

Before saying anything more, it is necessary that I should return again to the country which I referred to when speaking of the so-called "Greek" architect, Boschetto, at Pisa. The architects of the east and south of Italy, of whom he was one, were, in fact, practising an art which, even after their own time, was never really supplanted by Gothic work. And I know few parts of Europe which seem to be more interesting. The work we see there is almost as unlike the contemporary work of France, England, Germany, or the North of Italy, as is that of the Moors executed at the same time in Spain. The churches are usually cruciform in plan, with a central and two smaller apses, all projecting from the east wall of the transept; and in this one respect they appear to owe more to the earliest Roman churches than to any others. But the whole of their decoration is wholly unlike Roman or Romanesque work. The arches are constantly used for ornament only, without being in any degree whatever constructional. Sta. Maria, Ancona, is a good example of this. Here the whole front is covered with arches one above another, literally carrying nothing. The intrados and extrados of the arches are commonly struck from different centres. The arches are, indifferently, round and pointed. The walls are divided into panels by small pilasters at short intervals, generally 6 ft. or 8 ft. These have heavy sculptured capitals, which carry arcades; and these, where there are no windows, are filled in either with circular or lozenge-shaped panels of carved or inlaid work. The arches are frequently of horseshoe shape, as in the example shown of a window from Foggia, and some wall arcading from the same church. This is thoroughly Moorish work, and that it should be so is not much to be wondered at, for it is a few miles only from Lucera, where, as I told you in my last lecture, in the thirteenth century Frederick II. built one of the largest castles in Europe for his army of Saracen mercenaries, and gave them the cathedral for use as a mosque,—a somewhat strong measure for one for whose character his contemporary, Saint Louis, is said to have had great esteem. It is singular that this cathedral at Lucera should have some more than usually Northern features. The nave and transept have pointed arches and a small clearstory. But the three eastern apses are remarkable for having well-designed buttresses and good Gothic windows, with no trace whatever of the usual Eastern influence. The fronts of these South Italian churches are very uniform in arrangement, and their influence is felt all over the North of Italy down to the end of the fourteenth century. They are generally finished with a flat gable in the centre, and all the roofs are of the same pitch when there are aisles. Even those gables which seem to follow the lines of the structure are often false. The windows in the fronts are almost invariably wheel-windows, filled with delicate tracery, or sometimes with Moresque patterns, and always surrounded by a moulding or carved member, which seems entirely to separate them from the wall, on which they become ornamental panels. There are usually flat pedimental canopies over the doors. At Aquila there are round-arched doorways, whose joints are covered with Gothic arcades and gabled and crocketed canopies, with three rose-windows above and a wall diapered all over. This front was really not finished till 1315, and yet at first sight it looks like a work of the twelfth century

More to the west, and within reach of Naples, we see the same sort of influence rampant at Amalfi, at Minuto, Scala, Scaletta, Ravello, and Salerno. At Ravello, indeed, the Palace of the Rufolo family is a complete Moorish house, with its *patio* of two stories in height, its great gateway covered with a Moorish dome, and its enclosing walls adorned in true Moorish fashion. And the churches in its neighbourhood, though they are not Moorish in the same frank completeness, are full of evidence of the same influence. The Palazzo Rufolo was, I believe, built in the thirteenth century. The steeple of Amalfi Cathedral is of the same date—1276. Its lower stages have extremely stilted round-arched openings, and the upper stage is circular, with four circular turrets at the angles, the centre circle and the turrets being all covered with interlacing pointed arches. A central dome, similarly arcaded, rises over the church of Santa Maria, Ravello. The cloisters, which lend such a charm to Amalfi, are all similarly adorned, and you must note that the arcades project slightly from the face of the wall in all cases, so as to advertise the fact that they have nothing to do with its support; whilst the very design equally shows that most of the apparently arcuated work is false and unnecessary. And they are without mouldings.

My limits only allow me to speak of one other feature in these churches,—the pulpits. I take one of those in the cathedral at Ravello as my text. Its date is 1272, written on the marble by the "Marmorarius,"—as he called himself, —of Foggia who executed it. It is of white marble, inlaid with *opus Alexandrinum*, in the richest possible manner. The six shafts which carry it are spirally moulded and inlaid with mosaic, and rest on lions' backs. The mosaic is all let into panels surrounded with carving of most delicate character. The brilliancy of the marble, the delicacy and bright colours of the endlessly-varied patterns of glass mosaic, and the richness of the carving, make this certainly one of the most exquisite works with which I am acquainted. Nor is it less remarkable for some of its sculpture. The approach to it is by a staircase guarded at the foot by a doorway, over which is a bust of a queen, executed with considerable technical skill, and of a fair and stately presence. The size of this pulpit is very considerable, and it is one of many. Ravello alone has two others, a second in the cathedral, and one in San Giovanni, of earlier date; Salerno, two; Benevento, two; Sessa, one (of A.D. 1224, with round arches); Moscafo, one (with horse-shoe arches); and there are many more which it is needless to name. Here I must finish this episode. The art of Italy cannot be understood unless you realise thoroughly how completely different its history and development are from those of the rest of Europe at the same time. Few books put you *au fait* at this passage in the story, and I advise you to consult the only authority to whom I can send you,—Von Quast and Schultz's great German work on the architecture of South Italy. But it is by sketching and noting the peculiarities of these works for yourselves on the spot that you will alone really understand them. A very similar account might be given of the thirteenth-century architecture in Sicily; but I prefer to confine myself to examples which I have myself seen.

From this group turn now to the North, where at this time many churches were built, conceived much more in the spirit of the Early Gothic style than the former were. Of these the best examples for our purpose are those of the Frari and SS. Giovanni e Paolo, Venice; Santa Corona and some others at Vicenza; Santa Anastasia at Verona; and, at quite the end of the century, the churches of Santa Maria Novella and Santa Croce in Florence. Some Roman examples existed, but these have been so much altered and modified that it is a little difficult to refer to them. The Church of the Ara Cœli, and Santa Maria sopra Minerva, are the best preserved. In all these the plans are very similar. They have the usual Italian peculiarity of a transept, out of which a large apse in the centre and smaller ones on each side are projected. Their naves are generally divided into bays which are absolutely square, whilst the aisle compartments are oblong in the direction of the length of the building. This is exactly opposed to the usual French and English system. It gives arches of great span, and columns placed very far apart; and one of the results of such an arrangement is that the buildings in which it occurs always look smaller than they really are. The columns are usually plain,—circular or octagonal,—of great size; there is hardly any moulding on the arches, and the clearstory consists usually of a series of small circular windows, one to each bay. The walls have deep cornices. At Santa Anastasia, Verona, and at the Frari, Venice, the apsidal chapels have the rare peculiarity of being planned with an angle in the centre, with a by no means bad effect. Most of these examples are built of brick, and many have timber roofs to the naves and transepts, and groining to the apses and aisles only. They are thoroughly fine and useful buildings, and though nowhere to be classed in the first rank of architectural works, are yet, I think, the group of buildings which best deserve study of all that I have mentioned. In them, as elsewhere, I see much to condemn as well as to admire. Their window traceries are seldom agreeable, and never really skilful. Usually they appear to be pieces of tracery wrought in a single stone, and then cut off to fit the arch under which they are placed. But, on the other hand, there are many of their features of extreme beauty. Among these are the porches and monuments. These are commonly built with arches springing from single shafts, with flat gables and canopies over them. Of course, such erections could not stand for an hour without assistance, and this is at once given by an iron tie-bar connecting the capitals. But, with this assistance, there was still felt to be an air of instability in the arch, and this was ingeniously overcome by the addition of a heavy cusp on the under side of the arch, which gave the required effect by appearing to bring the weight within the line of the columns. So much depended on this cusp that it is generally drawn with the greatest care, and this detail shows as much as any the real artistic skill of the architect. Nowhere in Europe is there a more exquisite architectural group than in the little burial-ground of the Scaliger family at Verona. The larger monuments are all of this type, with the addition of a heavy pyramid crowned by a figure on horseback rising from behind the gables. The sculpture which adorns these works is also excellent,—very flat and in low relief, but full of evidence of careful study of natural forms. In almost all of these churches the use of coloured materials is more or less common. Unfortunately, few of the marble fronts with which they were intended to be finished were ever completed. The lower part of Sta. Anastasia, Verona, where the soft and delicate mouldings of the door-jambs are built in alternate courses of red, white, and grey marble, is of exquisite beauty. Such a construction, I need hardly say, brings out with great distinctness the most delicate shades of difference in the mouldings. It led the way naturally, also, to the final example of the most perfect arrangement of colour in construction, seen in such a work as Giotto's tower at Florence, which, it can hardly be doubted, was the result of his acquaintance with this beautiful work at Verona. For, only a short time before, in 1294, Arnolfo had faced the Baptistery hard-by with black and white marble in equal courses, after the fashion of the Genoese builders and of the architect of the tower at Siena. Unfortunately, the custom was to build a blank brick wall at the west ends of the Italian churches, with the idea of completing the work at some future time by the erection of a magnificent marble front, and in a number of instances we find the lower part of this, at the most, existing. The cathedral and Sta. Croce, Florence, and San Petronio, Bologna, are illustrations of this habit, in addition to the church just mentioned at Verona.

In all accounts of architectural progress, it is the religious architecture of the country that first of all attracts our attention. It is there that we see men's greatest efforts, executed in the most permanent fashion, and usually the examples of them which are still to be seen are many-fold more numerous, and have a history much more accurately recorded, than have the other buildings erected for secular purposes at the same time. But in Italy the life of the people in the cities with which the land is so richly studded was so active, so prosperous often, and so self-reliant, that it may almost be said, in many cases, that the secular buildings are of as much importance as the ecclesiastical. Every important city had its public building,—Broletto, Palazzo Publico or Communale, or del' Ragione,—in which its affairs were transacted, and where the courts of justice sat. In addition to these, there were an infinite number of palaces built by the wealthy citizens whose families formed everywhere the aristocracy, and generally went on from century to century in the same city, either governing it or taking an active concern in its affairs. Very many of these buildings are as perfect now as they were when first built; and in Volterra, Siena, Florence, Perugia, Pisa, Lucca, Orvieto, Piacenza, Bologna, Como, Milan, and, above all, in Venice (but at a later date), so many remain that we are able to form an accurate and fairly complete idea of what these great buildings were. Most of them were founded in the thirteenth century, but enlarged and altered greatly in the fourteenth. Volterra has its palace, built between 1208 and 1257,—a large simple unbuttressed building, without any sort of break in its simple outline. It was of four stories in height. Its windows, placed irregularly to suit the rooms, are of trefoiled lights under an enclosing arch, and the lights are divided by a delicate column in place of a mullion. At the back rises a tower intended to carry the city bell. The doorways are simple pointed arches, without any sort of moulding. In this case, as in most buildings of the period, we find a regular series of holes in the wall above and below the windows. There can be no doubt that these were intended for the timber supports of wooden balconies, and that so far from the effect having ever been intended to be what it now is, absolutely without shadow, the original state was as picturesquely varied as was possible by the deep shadows of these balconies, through which the still darker openings of the windows were dimly seen. Not far from Volterra is San Gemignano, where there are not only old houses, but still standing almost perfect a group of lofty towers, which gives the city the strangest possible appearance. Each family erected as part of its house one of these towers. They are very lofty, almost without openings, and with no attempt at architectural decoration. Probably this was confined to an overhanging parapet supported on machicolations at the top, and two great coats of arms emblazoned on the parapets or walls. They have but little architectural interest, but as they were universal in Central Italy I cannot omit to mention them. In Florence the most important work of the period is the Palace of the Podesta', —a good deal altered, and now turned into a museum. This was built round a courtyard, on the walls of which the Florentines, who were always desperately fond of heraldry, have inserted in all parts their coats of arms. Open arcades are built on three sides of the court. A great uncovered staircase leads up to a corresponding gallery with open arcades on the principal floor, and access is gained to the various halls and chambers from this. The arches used are sometimes round, sometimes pointed, and the details are all of the severest and simplest type. Here, as at Volterra, wooden balconies, with roofs on the uppermost, were carried along in front of the upper floor, so as to give access independent of that through the rooms themselves. The walls were crowned with an immense overhanging battlement, and a tower rose out of one angle. In the plan, the site being somewhat irregular, no care was shown to make the rooms or corridors or courtyard rectangular. Yet probably not one of the thousands who annually go to admire this really splendid building ever notice the irregularity.

Of other buildings of the same class and date I shall mention only two or three. The Palazzo della Ragione, Milan (1228), is one of the best. This has an open arcade on the ground story; above this a double string-course forming a range of panels with coats of arms, and breaking forward in the centre as a balcony or *ringhiera*,—a common and beautiful feature. The principal floor has also its open arcade on a grand scale, and above this, under the eaves, is a smaller continuous arcade, occupied at intervals by grouped figures in three divisions. The elements of such a composition are extremely simple; none, I think, can fail to be charmed with the effect, and it teaches us a lesson as to the results to be obtained by delicately-designed elevations, depending entirely upon good proportion and light and shade. Coming from Tuscany to such a building as this, or to the Broletto at Como, one is much struck by the wholly different temper shown in them. The Florentines and their neighbours seem always to have built in a severely, almost savagely simple fashion. You feel as if ornament were proscribed,—as if strong and lofty walls, tall unbroken towers, frowning parapets, sparsely-lighted chambers, were required by their laws or their temper. The gateways and walls of Florence were grand examples of a savage sort of simplicity,—enormous in size and extent, simple to a degree in detail, but executed with a degree of care and solidity which is very admirable. Sad it is to use the past tense of such works as these. Unhappily, Florence for a short period dreamed that she was to be the capital of united Italy, and in order to fit herself for the position set to work to demolish her walls, and to leave her gateways standing out alone in the midst of new boulevards, with the sole result of almost ruining herself financially as well as from our point of view. At Milan and at Como you feel, —as you do in the slightly later arcades of the Ducal palace,—that life was meant to be pleasant and enjoyed, and that the architect's first thought was how to make it more and more enjoyable.

Another important domestic work, begun in 1281, is the Palazzo Publico of Piacenza. This has its lower stage entirely supported on open arches, giving on to the piazza in front and to the usual enclosed court in the centre. The whole of the lofty lower stage is of white and red marble, whilst the upper is of red brick, with a marble cornice supporting a Ghibelline battlement. All the detail is extremely elaborate, and the brickwork especially is designed with extreme care. The supporting arches are pointed, and the decorative arches semicircular, and all the windows have coupled shafts in place of mullions. Recesses are formed in the wall for paintings, of which traces still remain. The great advantage which the study of these Italian domestic buildings affords to us is that to a very great extent they show us a noble class of work, dignified, grave, and often very beautiful in detail, and in almost all respects capable of being used consistently with our own notions of comfort and convenience. They are of great extent, and their chambers are lofty and large. The treatment of their windows is particularly worth notice. The stonework is complete in itself. Shafts take the place of our mullions, and balconies are often provided in front of the windows. The glass is fixed in a wooden frame set behind the window-shafts, so as not to interfere with their effect. In the larger houses there is generally a courtyard, in the centre of which is the well. The ground-story is either supported on open arches or appropriated for cellars, stores, &c., and the staircase leads up at once, and often in the courtyard of the house, to the *Piano Nobile.* Here the rooms are of fine dimensions, some of the more important being vaulted; and, if we picture them to ourselves as they once were, we may imagine no reasonable amount of comfort as wanting. They were the abodes of civilised people, much larger and more stately altogether than we are in the habit of making our homes, and full of suggestiveness for us. On the other hand, there were peculiarities which, fortunately, we do not want to imitate. The more important houses had towers attached to them, erected for the purposes of defence. They have no openings beyond those required for the discharge of missiles. Their battlements were swallow-tailed if the owner belonged to the Ghibelline party, square if to the Guelphs. From their walls were bracketed forward timber platforms, by means of which the approach to the doorway could be commanded. They are almost invariably plain square buildings, without break or buttress of any sort, and though sometimes of great size, nearly always extremely simple in design and detail, and really more like large square chimneys than anything else. Would that I could tell you more on this head! But the time is too short, and I have left much unnoticed that I ought to have touched upon. There are, for instance, those vast Halls of Assembly at Padua and Vicenza, the former no less than 90 ft. wide and 280 ft. long; the latter smaller, but still 72 ft. wide. They have simple arched wooden roofs of dark timber, and the walls at Padua are covered with paintings, which have been well described in the "Annales Archéologiques" by my friend Mr. William Burges. Then there are the cloisters, which are so numerous and so beautiful. Many of them are of two stages in height, and their long series of arches in each stage carried on coupled marble shafts. Some of the best are at Verona and Genoa, and of a more elaborate kind are those of St. John Lateran and St. Paul without the walls at Rome. These last are carried on coupled or quadrupled shafts, plain, moulded, or spiral; their arches are semicircular, and they have rich and rather classical cornices, and are filled in all plain spaces and round the arches with lovely decoration in glass mosaic. These were probably executed by one of the Cosmati family, who, in the convent of Sta. Scholastica, at Subiaco, in the wild glen which leads to the mountain sacred to St. Benedict and St. Francis, built a simpler cloister of the same sort, and left his name inscribed on the cornice. Beautiful as many of our English cloisters are, I think they never quite equal these Italian examples. One is charmed by the grace and simplicity of the design, by the beautiful proportion of the arcades, and by the evident skill of the men who contrived to carry their walls upon such delicate couples or clusters of columns, without any appearance of their being too weak for their work. I ought also to tell you of the baptisteries, beginning with the austere examples at Parma and Lucca, and going on to Pistoja, Cremona, Asti, Florence, and many more. They are almost all polygonal or circular buildings, Lucca being the only exception, and many of them delightful, not only in design, but in the decorations which have been added to them. I ought also to speak to you of the domes of this period, which we see at Ancona, at Sta. Maria Arezzo, and elsewhere. Not less does the Italian treatment of towers demand notice. They are either entirely without buttresses, or with small pilasters at the angles and repeated once or twice on each face. Each stage is similarly adorned, and usually they are repetitions one of another. A good example is the campanile of the cathedral at Viterbo. For some 50 ft. in height it is a plain mass of masonry; above this, four stages of coursed black and white stone, each stage having two two-light windows, and divided from the next by decided string cornices, complete the elevation of the tower, above which is a very low spire, a feature constantly introduced. This sort of design is of common occurrence. Evidently it is taken directly from the early Roman campaniles, of which so many still remain. I ought to say much more about these towers, which are so striking a feature of Italian buildings; but not less ought I to say something as to the monuments which everywhere adorn the walls of the cathedrals and churches, both inside and out, and oftentimes the piazza by their side. But time fails me. I have detained you long, and my only fear is, having had so many things to speak of, that I may not have dwelt long and exhaustively enough upon any of the points which I wish to impress on your memory. My hope is that if any of you have not concerned yourselves on the subject hitherto, I may have induced you to take an interest in what really contains subject for study of equal importance to all of you, whether painters, sculptors, or architects.

To sum up shortly what the study of Italian art teaches us in the thirteenth century, I think it may be said that, unlike the nations of the North of Europe, the Italians never really or at all heartily accepted or worked out the changes which came naturally from the use of the pointed arch. They never really realised what its use led to. Their system of groining, for instance, is from first to last simple to a degree. No difficult problems were ever faced or solved in its construction. Ground-plans were never carefully studied; there is little ingenuity or skill displayed in them, and hardly any improvement on those which the earliest Roman church builders had left them in such churches as St. Paul's without the walls or the Basilica at Aquileia. This is the more strange because some of the early Italian plans are extremely good, and the fondness shown for the circular form in so many baptisteries might have been expected to produce the same effect as it certainly did in Rome. The plan for the small baptistery at Albenga, with its alternate circular and square recesses and its central dome, ought naturally to have led to something far better than Niccola Pisano's apse at Padua. And it is very strange, seeing that the Italians almost always used the apsidal east end, that they should so very rarely have built an aisle and chapels round it, though they must have been aware of the singularly fine effects that their neighbours in France were achieving at the same time. Their sole care was, in fact, to make their ornament beautiful. It never occurred to them that the proper work of an architect is first of all to make his plan as beautiful as economic in its use of material, and as light and elegant as is consistent with stability. They were extremely careless about the general outlines of their buildings. On the exterior, sham gables and false constructions of all sorts abound, and the proportions are seldom agreeable; and any attempt to produce fine effects by combinations of the steeples with the buildings to which they are attached is extremely rare, even if it was ever attempted. The mouldings used are not good in themselves, or drawn with any real feeling for the light and shade to be produced by them; and when they are used for an archivolt, they are usually set upon the capital, which receives them in so careless and ignorant a manner as to produce the worst possible effect. The Italians never seem to have cared much whether they used a pointed or a round arch. Indeed, they hardly realised that one gave them more power than the other, and consequently the sort of constructions to which they confined themselves were nearly always such as could just as well be contrived with a round as with a pointed arch. The feature which more than any other distinguishes true Gothic work,—the buttress,—is rarely used. If it is, this is generally for ornament only, and I do not recollect an instance of a flying buttress. The Italians never discovered that the proper disposal of buttresses, so as to meet thrusts and weights at given points, was far more economical than the persevering use of thick walls without buttresses. Another difference is that almost all real Italian ornament is applied, and does not in the least belong to the structure. An Italian window is ordinarily surrounded by a moulding, which makes a sort of frame for it. The English window of the same age has a moulding above it to throw off rain, but elsewhere its mouldings are really cut in the wall itself, so that the window appears to be what it is,—a necessary part of the fabric. In addition to these peculiarities, the treatment of windows was never very good. The best examples are the domestic windows, in which shafts take the place of monials with very beautiful effect, but these seldom led to the execution of anything like our Northern traceries, the spandrels between the centres of the window lights and the enclosing arches being seldom pierced, and often left with no relief,—perfectly plain. The circular windows in the west fronts are innumerable. Their tracery, when it remains, is generally of the fourteenth rather than of the thirteenth century. One of the very best examples of the latter period anywhere is in the west front of the Church of Sta. Maria Toscanella, in which the doorways, and the arcade between them and the window, are carved profusely with well-executed dog-tooth enrichment. This window is rightly called a wheel. It consists of three circles, each divided into panels by columns, which take the place of spokes, and between these sharply-pierced cusped circles give a brilliant effect of light and shade to this beautiful design. One goes to Toscanella to see Etruscan walls and remains, and I confess to a real sensation of delight when in this sad and forlorn old church, standing with the cathedral outside the walls, and unused apparently, save by a hermit, who divides his time between them, I came upon so thoroughly charming a feature as this window and front.

The Italians, as we have seen, were always very open to accept fragments of work from other lands, it mattered not in what style. They employed Greeks, Moors, Frenchmen, Germans, Catalonians, side by side, at the same time. (They are always said to have examples of Norman and Angevine art, but of this I have never seen any evidence whatever. These people seem to have employed the native artists in their buildings.) The architecture of Italy admits less than that of the rest of Europe of regular classification. It was very eclectic. There was no passion for any one style all over the country. The architects rather than architecture ruled; and each had his own fashion and way of working. Then, again, the architects were usually sculptors; and as their taste for the sister art increased, they seem to me somewhat to have sacrificed the older art to her younger sister. With so much that is disappointing, uncertain, and unprogressive, there are, however, redeeming features which will always render the study of Early Italian art not only most instructive, but, at the same time, most fascinating. The beauty of many of the features in detail is as great as it well can be; and the taste with which coloured materials are used in construction is far in advance of anything that the rest of Europe can show, either then or afterwards. The Italians inherited an admiration for, and a due sense of the beauty of, detached columns. These, being used for their own beauty, were constantly made to taper slightly, and were used frequently to carry heavy weights, though with the closest approach to insecurity. In no other country is the use of these delicate shafts brought to such perfection. The shaft is used by itself, coupled with another, and in groups of four and of five. Sometimes a precious block of marble is cut into four shafts apparently knotted together in the centre. It is spiral, fluted, moulded, and carved. It is used with great constructive skill, an arcade carried on small coupled shafts carrying, as at Genoa, a second cloister above. The arches of these cloisters are as simple as they can be; but the shafts are so delicate, and their caps and bases so well proportioned, that I doubt whether any cloisters are more beautiful. In spite of all such architectural shortcomings, it must be said that in the combination of painting and architecture all other architectural schools were hopelessly distanced by the Italians. The root of all that is beautiful in their work was struck in the thirteenth century; and it is in the magnificent Church of St. Francis, on the steep lower slopes of the Apennines, that we see already in perfection the combination of the two arts. There are here three churches, one above another, built round the tomb of St. Francis. One enters the middle church by a pointed doorway between walls panelled with the red marble of Perugia in a lovely diaper of cusped circles. A dark and sombre collection of chapels, decorated on all sides by the painters of the thirteenth and fourteenth centuries, leads one on to the altar. Here cunningly-wrought screens of iron between marble columns guard the sacred central spot, and the eye becomes by degrees accustomed to the half-light, and sees and understands the subjects and colours which Giotto and others have left on vault and pillar and wall. The upper church was meant to be entered by a fine western doorway, but this is seldom open now; and after drinking-in this strange and mystic effect of the crypt, access is gained by a small newel staircase to the upper church. The change is one of the most startling that I know. From the darkest of sanctuaries you find yourself in a minute transferred to the brightest, the most beautiful, the most joyous. The architecture of the upper church is light and graceful, the windows are large, and the walls from the floor to the centre of the vaulted roof are covered with paintings, the whole of which are bright in tone, beautiful in arrangement, and, as it seems to me, full of the most excellent sentiment, even if the mere draughtsmanship is imperfect. Cimabue commenced his works at Assisi in A.D. 1265. The roof and walls of the nave were then ready for him and entirely undecorated. The former, at least, is probably his work or that of his immediate followers. The nave is of four bays in length. He painted the first bay with figures of the Four Doctors of the Church, and the third with the Virgin, St. Francis, and St. John the Baptist. The intermediate bays he covered with mere decorative colour,—blue, studded with stars,—the grounds of the subjects being gorgeous with yellow or gold. Borders of exquisite design and variety follow all the leading lines of the construction. The figures show, it is true, no few traces of Greek or Byzantine teaching and influence; but the simple dignity of their attitudes and draperies, the charm of the general system of colour, and the grand decorative effect produced by the alternated bays of subject and ornament, leave little to be desired. Nowhere, indeed, in the whole realm of art, can one put one's hand on a work in which the triumph of the Italian school of the thirteenth century is more certainly seen or more universally acknowledged than it is here. And if I have been critical to-night as to what appear me to be the shortcomings of Italian architects, you will perceive by the terms in which I conclude that the criticism comes from one who appreciates with enthusiasm what he holds to be the real and undying beauty and interest of this great period in the history of Italian art.

THE GENERAL EXHIBITION OF WATER-COLOURS, EGYPTIAN HALL.

This series of exhibitions, the seventeenth of which opened this week, has had a great loss in the death of Mr. J. C. Moore, whose beautifully-executed, though somewhat too artificial, portraits of children were always among its chief attractions. Two or three of his works are exhibited, and have the artist's usual characteristics, though they are hardly equal to the best work which he has done. It would have been quite worth while to have commemorated this artist by bringing together a representative collection of his works,—a compliment which has been sometimes paid in cases where there was less reason for it. Perhaps this idea may be carried out in a future exhibition.

Mr. Joseph Knight is one of the most important contributors to the exhibition, in so far as very complete realisation of style in the treatment of one class of subject is concerned; his large drawing on the door screen, "Veiled Sunlight" (564), is a very fine illustration of his special capacities, but there is more of art than nature in it. His small and less laboured drawing, "In Conway Bay" (74), a desolate spot among sandhills, pleases us more, as being more like a genuine transcript from nature, and less artificially worked up. Figure-subjects of any importance are not very numerous: one of the best is that entitled "Evening" (298), by Mr. Arthur Stocks, a cottage interior, with an old woman cleaning a lamp,—a drawing treated with that breadth and force of style and unity of feeling which can render the slightest subject interesting and suggestive. This may be compared (in spite of the proverb about "comparisons") with Mr. Stacey's interior, "The Poacher's Warning" (134), a work of somewhat the same class, and very complete in all its details, but which appears smooth and tame in effect in contrast with the previously named drawing. Mr. Stacey has succeeded admirably in one little point, the representation of the fire in the grate, in which painters not infrequently fail. There is character and pathos in Mr. Cotman's represenation of two little delinquents "Awaiting Sentence" (122). Three studies of a queer old woman, "Mère Morot" (563), by Miss Bertha Newcombe, are clever; and so is a little drawing entitled "The Stranger" (674), by Mr. John M. Swan. There are more finished figure studies, but they are mostly very deficient in interest, and there are some that are, artistically speaking, simply vulgar. Mr. J. W. Waterhouse's Roman scene, "St. Eulalia," is a fine work, but the principal figure is the least successful part of it."

It is generally difficult to discriminate any prevailing character or tendency in this exhibition, as one usually can in the two recognised water-colour societies' exhibitions. But in the present collection we seem to recognise in the landscapes a larger proportion than usual of works which have poetic feeling, and are not merely specimens of good manipulation. As instances, we may mention Mr. Alfred Parson's "June, 1879" (234), a very fine, broadly handled, fresh representation of wet summer weather. Mr. Arthur Severn's "Rouen, from St. Ouen" (243), a bird's-eye view of the river and town under a misty sunlight, is a fine thing; and the same artist gives us a very complete study of a house front and a flower-garden "near Ambleside" (173), only that it seems to want sunlight rather; the drawing is hung low, and perhaps a better light would bring it out differently. Mr. A. B. Donaldson admirably shows his capacity for seizing and making the most of all the colour in a scene in his very original and powerful sketch, "On the Witham, Lincoln" (472), showing the narrow, canal-like river where it flows through the town, with a battered old craft in the foreground. Mr. W. G. Addison's unnamed landscape (218) is one of the best things in the room; a scene on a mill-stream in a flat landscape, as remarkable for its general fresh and breezy effect as for the capital drawing and touching of the foreground vegetation. The same kind of praise may be bestowed on Mr. J. L. Henry's "Southwold" (162). Mr. M'Dougall's "Hayfield" is a fine landscape (501), though rather cold in colour. A small sketch, by Mr. C. Vernede, "A Study from Nature" (393), should be looked at; and Mr. H. Moore's grand sketch of sea, "As the Tide Ebbs" (345), needs no reminder,—no one could pass it by. Mr. Stott, who sends two incomprehensible splashes called "Sunlight" and "Under the Willows" (182, 270), appears to belong to the tribe of "impressionists," but he does not succeed in impressing us.

There is a fair proportion of drawings in which architecture of one kind or another plays an important part. Among these "The old Town Hall, Stonehaven" (373), by Mr. R. W. Allan, is one of the best: an old corner of a town, seen in a plashing rain, and conveying altogether an almost pathetic idea of decay. Another rainy scene is Mr. Waterlow's admirable little view of a farmyard and buildings, under the title "A Half-holiday" (200). Mr. Herbert Marshall has two beautiful studies of the Thames under the Arctic weather of this January, which are more completely good than his larger work, "The Approach to Westminster" (395). This is a view of the Houses of Parliament from a point on the Embankment close to the foot of Northumberland-avenue; but the scale of the clock-tower, &c., is certainly exaggerated, considering its distance from the point chosen,—so much so, that we were puzzled at first to make out what the intended point of view could be. "St. William's College, York" (333), by Mr. Medlycott, is an interesting and apparently faithful study of the quadrangle of a picturesque old building. "At Chartres" (76) by Mr. A. H. Haig; "A Frosty Morning, Liverpool" (39), by Mr. A. Cox; "Nuneaton Market-place" (152), by Miss Townsend; and "A Yarmouth Row" (160), by Mr. C. J. Watson, are good little drawings in the same category. Mr. Spiers sends two or three drawings of bits of Continental architecture. There is an exceedingly clever and complete realistic representation of the interior of a room, "The Study at Brantwood" (604), by Mr. A. Macdonald. Miss B. W. Spiers has struck out an original line in painting old books, a subject she has treated very cleverly indeed in "A Bookworm's Breakfast" and "A Bit of London Town" (598, 622), the latter being the exterior of a second-hand bookshop. There are some other good bits of "still life" scattered about, of which we may mention "Bacchus and Pomona" (436), by Mr. Whiteford, and "Christmas Roses" (312), by Miss Jenkins, as among the best; the latter artist is to be commended for painting flowers with the delicacy and tenderness due to those fragile creations. Fantin has set a rather questionable example of painting flowers in a powerful but heavy and loaded style, an objection to which some of the flower-paintings here are open.

THE PAYMENT OF SANITARY RATES BY LANDLORDS AND TENANTS.

At the present time, when the public are becoming more alive than was the case a few years ago to the absolute necessity of a healthy sanitary condition of dwelling-houses, it may not be inappropriate to touch upon the legal question as to whether the landlord or the tenant of a house leased to him for a term is liable to pay for sanitary improvements. *Primâ facie*, of course, the person against whom the charge, as we will call it, is made is the person who must pay it. It is a matter, however, of common knowledge that in all houses there is a rule or covenant to endeavour, at any rate, to place the burden on the shoulders of the tenant. In the recent case of Budd *v.* Marshall (50 *Law Journal* Rep., App., 124), Lord Justice Baggallay points out that "it is common knowledge that, generally speaking, the object of a landlord is to secure during the term a rent of a certain amount as free from deductions as the law will permit," and therefore he sees nothing inequitable in holding a tenant to his bargain. Of course, when a man enters into a contract he is bound to abide by its terms; but there can, as it seems to us, be no doubt that it is very inequitable that a tenant, say for twenty-one years, should be obliged to pay for compulsory improvement which will permanently benefit the property long after he may have quitted it. That the tenant should pay some portion of the cost is fair enough under certain circumstances; but that he should bear the whole burden is grossly unfair. True, he has, we will assume, covenanted to pay everything in the nature of rates which may be levied on the property; but tenants should in all cases endeavour to prevent inequitable and one-sided agreements of this kind from being entered into. Further, it is a question well deserving of consideration whether such covenants, having regard to the monopoly which exists in house property, in London at any rate, should be allowed in leases at all. At present, however, we must turn to the question whether, under these one-sided covenants, a tenant is, in all cases, bound to pay for compulsory sanitary repairs.

Unfortunately the matter is one which, having regard to the decisions on the subject, is very far from being free from doubt, and it would be impossible, we may almost say, to give a confident opinion upon any but the very plainest covenants. Let us take the last case first, that of Budd *v.* Marshall. In this instance the scene of the dispute was Brighton, and in the course of the year 1877 the Corporation of that town, being the sanitary authority, had caused the landlord of the house in question to drain the premises into the common sewer and to fill up all cesspools,—no doubt work needing urgently to be done. The cost of this work amounted to 124*l.*, and this sum the landlord sought to recover over from his tenant. To do so he, of course, relied on an express proviso in the lease of the house in question, which ran as follows:—The tenant shall "bear, pay, and discharge the land-tax (if any), sewers-rate, borough-rate, improvement-rate, tithe, and tithe-rent charges in lieu of tithes, and all other taxes, rates, duties, and assessments whatever, whether Parliamentary, parochial, or otherwise, which at the date of the lease were, or at any time hereafter during the said term should be taxed, charged, rated, assessed, or imposed on the said demised premises, or any part thereof, or upon the landlord or tenant in respect thereof." Now if this had been a rate levied for the purpose even of benefiting the house, or a charge in the nature of a rate, the argument might have been unnecessary; but it was, in fact, a bill paid by the landlord in respect of improvements which he executed under compulsion of law at the bidding of the sanitary authority of the town.

Two of the Lords Justices were, at the hearing of the appeal, in favour of the landlord, and one, Lord Justice Brett, in favour of the tenant, so that the former gained the day. The ground upon which the majority of the court were in favour of the landlord seems to have been that in this covenant the words "duties," and "imposed on the said demised premises, or any part thereof, or upon the landlord or tenant," comprised the costs incurred by the landlord in executing these improvements. On the other hand, Lord Justice Brett argued with much force that the only "duty" was the duty to do the work, and that the payment was not a payment in the nature of a rate or tax so as to bring it within the words of the covenant in the lease. "I think," he said, "that it is a payment like that of a carpenter's or bricklayer's bill, and that such a payment is not a payment in the nature of a rate or a tax. An improvement-rate is not like this; it is imposed on a whole district; but this payment is one for work done." Considering all of the judgments, it must be confessed that that delivered by Lord Justice Brett in favour of the tenant is the most conclusive, for the whole drift of the covenant, if our readers will observe it carefully, is seen to be towards rates, and payments in the nature of rates. "All other rates, taxes, duties, and assessments whatsoever, whether Parliamentary, parochial, or otherwise," are the widest words in the covenant; and they obviously are meant to include charges, as we have said, in the nature of rates. No doubt, however, it was the intention of the landlord not to pay wholly, or even partially, as he should have done, anything in respect of such a charge as this, but we confess in construing it that we are prepared to side with Lord Justice Brett. Besides, there is this to be said: the drain should have been made before the tenant occupied the house; and if it had been, the landlord would have made it, and morally he should when compelled to make it have borne, at any rate, part of the expense, for landlords have duties as well as rights,—not only if they are Irish landlords in desolate agricultural districts in the West, but English landlords in populous and fashionable watering-places.

The law, as we have said, however, is full of confusion on this point, as can be easily shown by some instances. In the case of Tidswell *v.* Whitworth (36 *Law Journal* Reports, C. P., p. 103), the judgment was in favour of the tenant. Here the covenant was to "pay and discharge all taxes, rates, assessments, and impositions whatsoever (except property tax) which during the term should become payable in respect of the demised premises." The tenant here was held not bound to repay to the landlord the amount assessed upon him in respect of certain paving and draining works which had been constructed under the Manchester Improvement Act. But very shortly after, in a case a little later, that of Thompson *v.* Lapworth (37 *Law Journal* Reports, C. P., p. 326), the very same court, comprising Chief Justice Bovill and three puisne judges of the Common Pleas, decided in favour of the landlord when the covenant was "to pay and discharge all taxes, rates, duties, and assessments whatsover which should be taxed, assessed, or imposed upon the tenant or landlord of the premises in respect thereof." Here the tenant was held bound to repay to the landlord the amount which he had been required to pay in respect of the paving of a street under the Metropolis Management Act, which the parish were obliged to do themselves and then charge the cost against the landlord. The *ratio decidendi* of this last case was apparently that the charge levied by the parish was a duty within the meaning of the covenant in the lease. Two other cases were decided, by Mr. Justice Lindley, in opposite ways not very long ago, but the difference seems to have been caused by the fact that in one instance the landlord executed the work, paid for it out of his own pocket, and charged the tenant with it, and that in the other the parish performed the work, and then charged the landlord with the cost, who, in his turn having paid, claimed over against his tenant. In both cases, however, the work was done under compulsion of law, and both cases, as it seems to us, are rather in favour of the tenant's contention in the case of Badd *v.* Marshall, upon which we first commented, and which is the latest and most important judgment on an important question. In all three cases there must of necessity be a kind of unreality in the legal arguments, because it is obvious enough that when the landlord entered into the lease he never intended to make himself liable for any work of this character, which was done during the tenancy, whether he or the parish were the parties who actually executed it. On the other hand, we by no means say that the tenants imagined that they were to pay such charges as this, and that an ingenious lawyer raised these points for their benefit, because in most cases a tenant only intends to pay the usual rates and taxes, and any charge such as we have mentioned, even if in the nature of a rate, it was far from his intention to pay in full at least. It would no doubt be, as Lord Justice Baggallay said, "inequitable to impose on the landlord the whole burden of an expenditure from which he can derive no benefit during the remaining portion of his tenant's term." But clearly it is equally inequitable to charge a tenant with the whole of the cost, and there is much even to be said in favour of charging the whole cost on the landlord if the work is such as should properly have been executed by him before he gave a lease of the house.

THE AUDIPHONE.

At no previous period of human history has the introduction of an invention of striking novelty been so immediately followed by the perfection of a group of inventions of somewhat similar nature as in the case of the telephone. The vast stride which has been taken by science during the past half-century is illustrated by the history of these inventions. The principle which underlies them is one, and, as such, has been grasped by each successive inventor, although as yet but little has been said on that part of the subject.

Of all the unconnected groups or series of vibrations with which the material universe teems, a certain series is appreciable by the animal ear, and is known as sound. The ear is so constructed as to receive these vibrations from the atmosphere,—to filter them, as it were, from other forms or modes of vibration, and to form them into a code of definite symbols, which, to the human ear, are chiefly valued as constituting articulate speech, or melodious music. Experiments have been made as to the intensities of these vibrations, which point to the possibility of the construction of a physical alphabet; which would be a step further in the subjugation of natural phenomena to human service than even that taken by the construction of the physiological alphabet of Professor Max Müller. These vibrations have been made to sketch their own outline, by means of the action of a light index resting on a strained membrane, which vibrated to the voice. A strip of paper is made to move beneath the index, and a section is thus traced which can be more readily described as resembling the section of a railway, plotted to a distorted scale, over a mountainous country, than in any other manner that occurs to us at the moment. The letter T is the most vivacious and self-asserting of all those of the alphabet, and a sharp lofty peak is thrown up in the section where this consonant occurs. To show its full effect, T should be followed by a vowel. Thus in the word "to," the peak stands up like the stem of the letter L; while when h or r follows T, there occurs a sudden rise followed by a rounded and gentle fall. Professor Graham Bell, and Dr. Blake, of Boston, Massachusetts, actually made use of the dissected portions of the human ear for the graphic delineation of the vibrations of sound. The bone called the *stapes* was removed, and a short piece of hay of about the same weight was substituted for it, so as to increase the amplitude of the vibrations, which were traced, by the aid of the piece of hay, on smoked glass.

Experiments of this nature, which date as long back as 1874, have led to those discoveries which have been hitherto principally utilised for the conveyance of sound from a distance, as in the telephone, for the magnifying of sound, as in the microphone, and for the reproduction of sound after any required lapse of time, as in the phonograph; and in the course of these inquiries much has been learned as to the mutual interferences of the vibration of sound with the electric current and with the movement of radiant light. The most recent step to which attention has been called is one in the opposite direction to that above indicated. The instruments we have named all agree in the fact that they collect sound, as does the animal ear, from free vibrations in the atmosphere. The idea of conveying to the sensorium the same vibrations by means of a solid and vibratory medium, is one that is far older and simpler than the other inventions, and yet has been unaccountably neglected. Commerce has spoken with a louder voice than surgical science, and inventions have left the deaf man shut out from the intercourse which they could have afforded him with his fellow-creatures, while they have been busy in flashing the prices of commodities across the Atlantic.

A writer, cited in Knight's "Practical Dictionary of Mechanics," states that he knew an officer who was with Nelson at Copenhagen, and who was wounded so that his hearing was destroyed. He was in the habit of holding a music-box between his teeth, or holding between his teeth a string that was tightly strained, the other end being shut in between the lid and the box, and he then heard the tunes perfectly. Most persons who have given attention to the subject are aware how such a sound as the ticking of a watch is conveyed to the ear by contact with a rod of wood. It is remarkable that, notwithstanding the care and art bestowed on the construction of ear-trumpets for the deaf, the indications above mentioned have not hitherto secured public attention.

All that the ear-trumpet is intended to do is to collect and transmit to the ear a fuller body of sound than would otherwise reach it. It is an artificial method of performing the same office that is discharged by the large erectile ears of the hare, and of some other animals. It was suggested, no doubt, by the simple habit of the partially deaf of putting the hand behind the ear. But if the *membrana tympani* be destroyed, which is a not unfrequent cause of deafness, this pouring of sound through a funnel into the ear is useless, as there is no provision available for utilising the vibrations thus conveyed so as to lead them to the sensorium. That connexion, in fact, is wanting which effects audition.

Here comes in the new invention of Dr. R. S. Rhodes, of Chicago, which he has named the Audiphone. He makes, in fact, a sensitive external sounding-board for the collection of vibrations, and he then conveys them by direct conduction to the bony structures of the head. The effect of the natural tympanum is thus replaced, and the result is perfect hearing, unless the auditory nerve be itself in fault. The instrument, as now described, is a thin plate of vulcanite, about 9 in. by 10 in., which is curved and kept in a state of tension by cords. The edge of the vulcanite plate is held between the teeth, and the words of a speaker are distinctly heard. This instrument has been lately applied with the happiest results, under the direction of the London School Board, in their department for the education of the deaf and dumb. Dr. Rhodes is himself deaf, but can converse fluently by the aid of his invention.

Some little time since an account appeared in the papers, on which we cannot now lay our hands, of a contrivance for the same purpose, which was described as in the form of a fan. In any case we apprehend that the essential requisites are a freely vibrating surface to collect the sound, and a direct connexion, by vibrating medium, such as wood, vulcanite, or perhaps metal, with the teeth, and thus with the bony structure of the head. The direct contact with the teeth is no doubt the natural substitute for the action of the drum of the ear, as the hard enamel forms a perfectly conducting surface. We have little doubt that instruments will hereafter be made more resembling the receiver of the telephone or of the ear trumpet than the plate above described, a vibrating stem being substituted for a flexible tube.

Bristol and Clifton Sketching Club.—We are glad to learn that the junior members of the profession in Bristol have instituted a sketching club, having amongst its objects to afford facility of communication between the junior members of the profession and those practising the kindred arts in this city and neighbourhood; to enable the members to visit the chief edifices and ruins of the neighbourhood for the purposes of studying; and to hold periodical meetings of members for the reading of papers and discussions on subjects relating to architecture and the allied arts. Any one directly connected with art is eligible for membership, including builders' draughtsmen. Mr. G. E. Ford, 31, Clare-street, Bristol, is hon. sec. and treasurer.

AGRICULTURE AND RAILWAY TRANSPORT.

A large attendance, comprising two dukes, six other peers, six baronets, and various members of Parliament, was present at the meeting on the 2nd of March current, of the Council of the Royal Agricultural Society, at its rooms in Hanover-square. On the motion of Mr. Aveling, a special committee was appointed to collect evidence on the subject of railway charges to lay before the Parliamentary Committee which has been appointed to investigate that subject. It was the complaint of the speakers that the differential charges which, — as it is urged, —the various railway companies are in the habit of illegally levying on agricultural produce, led to great suffering in many districts. It will be observed that this important body is approaching, from another point of view, that question on which we have long urged that the welfare of the railway companies of the United Kingdom so closely depends, viz., the thorough publicity of their tables of charges. This is important, not only as regards giving fair notice to the public of what they have to pay, but as informing the shareholders of the true character of the business which they carry on. When an unduly low charge is made on one object, or on one part of the line, the endeavour to recoup the loss by overcharges in another direction is certain to be made, unless the safeguard of publicity be present. The Railway Commissioners have recently reported that it was desirable that the companies should give fuller information as to their rates, as well as with regard to the legal powers on which they relied for the imposition of each particular charge.

Mr. Aveling cited the case of a charge on the South-Western Railway of 5s. for the carriage of manure, for which the legal charge was only 1s. Again, he stated that the charges on the London, Chatham, and Dover line from Farningham to London for farm produce was much higher than that from Dover; thus placing English agriculturists at a disadvantage as compared with the importers of foreign produce. That important agricultural journal, the *Mark Lane Express*, is devoting attention to this serious question. For milk, that journal states that, within a radius of 170 miles from London, the same company charges 700 per cent. in excess of the maximum legal rates. It is beyond our present object either to adopt or to question these statements. They are by no means new. Much very pertinent information on the subject was collected by Mr. Parsloe, and published in his little book called "Our Railways," of which we have before spoken. Our present object is not to express any opinion, except that of the importance of furnishing the public, as well as the shareholders, with definite information as to the business actually carried on by the companies.

There are, it ought to be borne in mind, two opposite principles, for which different parties contend, as to the regulation of railway freight. The principle which is advocated by some of the ablest railway statists in the United States is that the rate of freight should be determined, not by any fixed rule, but by the amount which the articles can bear. Thus, if a hundredweight of hops were worth as much as a ton of timber, these statists would charge twenty times as much per ton for the former as for the latter, without taking any heed of the cost of conveying either. This principle, if adopted, must ultimately place the welfare of every district, and of every business, more or less at the mercy of the railway companies that serve it. And, which is our present point, it leaves all charges so thoroughly at the disposal of the directors, that nothing but very great wisdom, watchfulness, and tact on their part can assure the thorough working of their business. How far this differential charge is just we leave it for the Royal Agricultural Society to show. How far it is safe, is another question. We think it is not to be denied that almost every case of railway financial disaster is due to the adoption of the principle of charging what the freight-payer can afford to pay, in contradiction to the principle of equable rate, calculated on what the company can afford, and enforced without favour or discrimination. On the Philadelphia and Reading Railroad we have had the latest illustration of the mischievous effects of charging what a traffic can bear, rather than what it will pay the railway company to take. The cases where this primary law of business is adopted by railways are very few. The only accounts which, on the face of the official returns, show the profit of each portion of business separately, are those of the New South Wales railways. Yet it is obvious that it is only by such accounts that the shareholders can be assured that the best is being made of their property. There is no doubt that if, thirty-six years ago, any one had ventured to predict that the railways of the United Kingdom would not earn more than from 4 to 4¼ per cent. on their capital (and if such pessimists had been believed) our railway capital would now be some 200,000,000*l.* or 300,000,000*l.* less than its actual amount. At the same time, the aggregate gross earnings of the lines would have been less,—less by all the unprofitable competition traffic; the net earnings would have been proportionately, or even actually, more; and the dividends might have been as good as are those of the best French railways.

At the present time every one is calling on our railway companies for cheaper work. Colliers, miners, farmers, importers,—all demand lower rates. The real railway guinea-pig, the third-class passenger, still contentedly pays his penny a mile; although it is certain that, if brute matter can be conveyed at a halfpenny per ton, matter that loads, packs, and unloads itself ought to be conveyed for much less than 16·5d. per ton, which is the charge at the penny-a-mile rate per passenger. On the other hand, there is the broad and unpleasant fact of dividend. The companies cannot afford to do what is asked. The proprietors are, as it is, underpaid. We can see nothing before us but squabble and discontent; loss, even if ruin be averted, unless the business rule of counting the cost be adopted. To this end the Board of Trade, the Railway Commissioners, the Royal Agricultural Society, and all those who move or are moved by either of those important bodies, have to look. We desire to prejudge nothing. But we point to the general discontent, and to the impossibility that exists to any one saying when it is, or is not, unreasonable. We point to the change of policy which is now apparent in some cases. And we urge all railway shareholders to reflect that until they actually know what each part of the great carrying business costs, as well as what it earns, they cannot at the same time give satisfaction to their numerous, and, at times, conflicting customers, and be sure of their own safety. To make the maximum profit is a point that they seem to despise. It would, however, be only just to the shareholders to enable them to judge for themselves whether they prefer to increase the nominal, or the real, income; the gross or true net revenue. As to this they are now kept wholly in the dark.

SUBWAYS AND IMPROVEMENTS IN LONDON.

One of the chief failings of our national character is the habit of doing things at a rush, without due consideration. It is, no doubt, often better so to do, than not to do them at all, which is, unfortunately, usually the alternative. Calmly to survey the ground, to mark out the course which it is best to take, and then to study the details of that course, before plunging upon it, is a procedure which seems to impatient men a loss of time; but, in the end, it saves not only time but cost,—often cost of the heaviest kind. In almost all our great centres of population we are now subjected to annoyance, cost, and danger, from the fact that we have allowed our towns and cities to grow as if they were wild plants, and have never, with few exceptions, taken timely precaution for the convenience of the future inhabitants. It is a great thing to bear this in mind; and it is thus with satisfaction that we note the reply made in the House of Commons, on the 2nd current, to a question from Sir Harry Verney, by the Chairman of the Metropolitan Board of Works.

In the cases of the Victoria Embankment, Queen Victoria-street, Northumberland-avenue, Commercial-street, Whitechapel, Garrick-street, and Southwark-street, the Metropolitan Board have made subways for containing gas and water mains. With regard to the new streets proposed from Charing-cross to Tottenham-court-road, and from Piccadilly-circus to New Oxford-street, power has been taken in the Acts of Parliament to form subways. We must, to a great extent, agree with Sir J. Hogg in the remark that the inconvenience of disturbing existing arrangements is so great as to prevent any absolute rule being adopted for the formation of subways. But we must urge that the subway system ought to be regarded as normal; and that in all changes and improvements, however partial, this should always be borne in mind. In this event, each new piece of work will be a preparation for a future state of systematised convenience. Otherwise, each new and independent piece of work will prove a fresh obstacle to future improvement of the City as a whole. The usual method of burying gas and water mains in the ground, to be injured by the traffic, and only to be mended by picking up the road, has been shown to be as direct a cause of terrible danger as it is of intolerable nuisance.

COST PER MILE OF THE RAILWAY TO CANDAHAR.

While public attention is so much directed to Candahar, it may not be out of place to remind our readers of the account which the *Builder* gave, on the 11th of September last, of the construction of the Candahar Railway. The exact length of the caravan route from Rohri, by Jacobabad and Quetta, to Candahar, is not stated in either of the communications made to the Institution of Civil Engineers, nor do we find it mentioned either in the Blue Book on the "Moral and Material Progress and Condition of India," or in Mr. Andrews's "India and her Neighbours," a work published in 1878, which may now be consulted with advantage. As far as scaling from the map can be relied on, the Bolan Pass, which is immediately below, or on the Indus side of, Quetta, is at about three-fifths of the distance from Rohri, on the Indus, to Candahar. The length of line actually laid is 133 miles and a half; to which have to be added twelve miles of branches. There are also eighteen miles of siding, which is at the rate of 12½ per cent. on the mileage. The cost of the distance, say 145 miles and a half of route, was 725,000*l.*, or almost exactly 5,000*l.* per mile, of which 3,275*l.* represents the cost of materials and plant, and the remainder the cost of labour. But to complete the whole line, including permanent works in masonry, stations, and workshops, habitations and staff quarters, and to maintain the works for five years, will cost a further sum of 250,000*l.* or 1,725*l.* per mile. Out of this sum, however, less than 325*l.* per mile cannot be allowed for the cost of five years' maintenance, which is properly a charge upon revenue. This brings the cost of the line with considerable exactitude to the round figure of 6,600*l.* per mile, including locomotive and carriage stock.

The work is not now proceeding beyond Quetta. It was intended at one time to lay this portion of the line on a narrow gauge, in which case the cost would he considerably lower than that already incurred. But leaving this for future decision, the fact that the line to the Bolan Pass was laid with the extraordinary rapidity of one mile and three-fifths per day, and at an outside cost of 6,600*l.* per mile, is one that merits very serious attention at the present juncture of affairs.

STATE OF BUILDING IN SMALL TOWNS AND VILLAGES.

Few persons, comparatively, see the reports that are issued almost week by week from the medical department of the Local Government Board. Those who do must be surprised at the large amount of work done there, and of the state of things which these reports show still to exist. We have a pile of them before us. The last two which have reached us are Mr. John Spear's, on the sanitary condition of Shadwell in the Rural Sanitary district of Wetherby, Yorkshire, and Mr. W. H. Power's report respecting improvements in the sanitary condition of the Faversham Urban Sanitary District since a former inspection. An account of them would be interesting, but we have not space at command. They show, in the strongest manner, the necessity of proper building regulations applicable to the whole country. At present urban authorities may make by-laws with respect to new buildings, if they like, and any rural sanitary authority,—*i.e.*, board of guardians,—may apply to the Local Government Board for urban powers to enable them to make similar by-laws. But this is shown to be wholly insufficient to meet the requirements of the present day, and we contend that it ought not to be permissible under any statute for a man to erect a house that is either unstable, unwholesome, or in danger of being burned. In the Isle of Wight recently we saw some cottages being built where no building regulations are in force, and observing that the joists of the upper floor were carried beneath the hearth, their ends resting on the bottom of the chimney-opening, sent for the master-builder and pointed out the danger of such a mode of construction. He, however, while recognising the correctness of what was said, merely replied that it was not likely that a fire would ever be lighted in the fireplaces of the upper rooms! This, and other modes of construction equally dangerous in one way or another, ought to be prohibited universally, and the appointment of competent persons ought to be required to see that the building regulations are carried out. For this purpose small fees, payable to the sanitary authority, should be authorised towards the salary of the surveyor.

It would surely not be difficult to frame an Act for this purpose containing certain simple regulations applicable to every new building, whether standing alone in the most rural district, or in the midst of the most crowded town.

THE BERLIN TOWN HALL.

Berlin has been so much in men's mouths (and we might include those of the ladies too) during the past few days that it will not be out of place to give our stay-at-home readers a view of a striking part of the city,—the site of the Rathhaus, the erection of which took up nearly ten years. In consequence of the unprecedented extension of Berlin, and the steady growth of the jurisdiction of the Berlin municipality, the insufficient accommodation afforded by the old Town-hall of the city had become more and more apparent, and a new hall had become necessary. But, like the old building itself, the space occupied by it was wholly inadequate for the requirements, and the first expenditure involved was a sum of 150,000*l.* for buying up the block of houses enclosed by the Königstrasse, Spandauerstrasse, Jüdenstrasse, and Magelgasse. Competition was first invited in 1856, and although eminent architects entered for the contest, the municipal authorities did not choose any of the designs submitted. Baumeister Wäsemann, who possessed their special confidence, was therefore commissioned, in 1859, to make fresh plans, utilising, as far as he could, the designs sent in, and taking account of certain alterations and additions. The new plan, after being submitted to a committee of architects, was finally approved of by the authorities. The foundation was laid on June 11, 1861, on the eastern space, and on April 1, 1865, that half of the building was completed. By proceeding energetically with the building operations, the tower, 275 ft. high, and the western half, bordering upon the Spandauer Strasse, were completed by the close of 1869.

The large rectangle of buildings thus erected has a length of 310 ft., and a depth of 295 ft. Its elevation from the pavement to the cornice is 85 ft., rising on the principal front, facing towards the Königstrasse, to nearly 300 ft. in the tower. It springs from a basement of grey granite. Brick is used for the edifice, the brick buildings of Upper Italy of the Early Renaissance having served as patterns. The selection of this material is also in accordance with the architectural tradition and old customs of Prussia, where are found many specimens of the brick architecture of the Middle Ages. Terra-cotta has been employed for the decoration of the Town-hall, which otherwise is very simple in style exteriorly.

The four fronts of the building, although differing from each other in detail, have a decidedly uniform character. Each of the four corners of the building projects, tower or bastion like. The heavy brickwork of the façades is relieved and enlivened by the deep recesses of the round-headed windows running through the first and second stories; above, by the smaller windows of the third story; below, by the flat-arched window-openings of the ground-floor, protected by bronze grilles. The whole is surmounted by an energetically projecting cantilever cornice and parapet. The number of windows varies in each front, and the middle portions differ from each other in their execution, besides being of various widths. The principal façade has a round-headed opening running through the three stories, the lower half of which contains the principal entrance, closed by a rich bronze screen. The upper portion contains the large recessed window, in coloured glass, of the staircase. The tower rises in the middle of the Konigstrasse front. The details of its execution are obvious in our illustration. It presents agreeable effects of light and shade. All the façades are decorated with reliefs in terra-cotta, modelled by the best artists, such as Hagen, Professor Fischer, F. Drake, Calandrelli, Schiffelmann, Zur Strassen, Siemering, W. Wolff, and Dankberg, and executed by the well-known establishment of March.

The ground-plan and the whole interior arrangement of the Berlin Town-hall, as well as its general architectural features, were severely criticised at the time of its completion, but it would lead us too far to enter upon these strictures.

HERTFORDSHIRE CONVALESCENT HOME.

The new buildings for this Home stand on the crest of a hill near the West Marina Station, St. Leonard's, with an uninterrupted view to the sea, and a south-west view extending to Beachy Head. The site consists of about an acre of land, and the building stands in the midst of a garden, with a drive approach from the Westcliff-road. The idea of the building has been to avoid the character of an institution, and to give, both in the architecture and internal arrangements, as much the character of a home as was consistent with its uses. The Home is entered on one side to the men's department, and on the other to the women's, and the upper floors are approached by distinct staircases, the communication being by a pass door, to be used only by the matron. Facing the sea, and sheltered by a continuous verandah, are the sitting-rooms, with deep bay windows; in the rear of the hall, and approached from each side, is the dining-hall; and in direct communication with it in the rear, the kitchen, scullery, and other domestic offices, the dinner being served through a buttery-hatch. On the right as you enter on the women's side are the committee-room, the matron's room, stores, and other accommodation.

On the first and second floors there are a series of dormitories, fitted to take forty beds, designed with a view, as far as possible, of securing cross ventilation to each room. Separate sick-rooms are provided for each sex, with lavatories and bath-rooms, there being also accommodation for the matron, the servants, and provision for stores of linen. Provision has been made on an average for a space of not less than 1,000 cubic feet for each bed, and under no circumstances will more than seven persons sleep in one room, the average being less.

Attention has been paid to the question of ventilation, fresh air being admitted under the sills of the windows by brass hit-and-miss gratings from bent flues, and the extraction is by means of ventilating-flues taken up in the chimney-shafts fitted with "Eyre's" ventilators. The question also of the drainage has received attention, direct contact with the main sewer being intercepted by a Doulton's trap, the sinks and bath-wastes discharging in the open air into trapped gratings, all the soil-drains being without the building, and in every case ventilated at the top. The rain-water has been preserved by a separate system of pipes, and is taken to a large tank available for house use.

Internally the building has been fitted with Lloyd's ventilating and warming stoves to the principal rooms, by the use of which a continual supply of warmed fresh air is brought into the rooms. The chimney-pieces are of wood, fitted with tiles. The principal entrance-door has some very good stained-glass, given by Messrs. Shrigley & Hunt, of Lancaster & London, who also gave hand-painted tiles for some of the chimney-pieces. The home has been neatly distempered and coloured to cheerful tints, and the woodwork is left varnished, the staircase being of pitch-pine. Tiled floors have been laid in the corridors, and the walls have all been finished with hard surfaces.

The whole of the works have been executed by Mr. Ebenezer Lawrence, of Wharf-road, City-road, London, and the designs have been prepared by Mr. Thomas Chatfeild Clarke, of Bishopsgate-street Within.

New Schools are about to be erected at Slough-lane, and considerable additions to the Brasshouse-lane and Corbett-street schools, for the Harborne and Smethwick School Board, from drawings by the architects to the Board, J. F. Sharp & Co., of Birmingham.

WESLEYAN CHAPEL, QUEEN'S-ROAD, WANDSWORTH-ROAD.

This is one of ten chapels to be erected during this year, for which the late Sir Francis Lycett provided most generously the liberal grant of 4,000*l.* for each.

By express desire of the local committee the Italian style has been adopted, and the building will be erected in Bath stone and picked stocks. Sitting accommodation for 1,000 will be provided,—on the ground-floor 650, and in the galleries 350. Adjoining the chapel large school-rooms will be erected with vestry, class-rooms, and the usual offices. The architect is Mr. James Weir, of the Strand.

ALTAR-TABLE, ST. BRIDGET'S CHURCH, WAVERTREE.

This church, erected a few years ago at Wavertree, a growing suburb of Liverpool, and dedicated to St. Bridget, is remarkable for its departure from the usual style adopted in ecclesiastical buildings of the present day. The primitive form of the Italian basilica was selected, both as to plan and elevation, but, in place of the somewhat impure details to be found in the prototype, a more refined and almost Greek character pervades the mouldings and other parts of the edifice. We gave a view of the interior, with plan and full particulars, July 15, 1871.

We supplement the illustrations already given by producing this week a view of the altar-table, with details of some of the carvings. The architect's aim has been to introduce as much Christian symbolism of a simple and easily-recognised kind as the occasion permitted. The table stands under the eye of the chancel dome, upon a floor comprising eleven varieties of marble in patterns. The sur-base is of black marble. Being isolated, it is treated with the same amount of care, and in a similar style on each side, as follows:—

The principal fronts are both divided into three panels (Trinity) by pilasters, each panel being occupied by a deeply-sunk and moulded circle (Eternity), and containing a cross (Passion), with the sacred monograms F.P.SS. at the intersection of the arms, the monograms being substituted on the opposite side by the Lamb, a hand issuing from a cloud, and a dove respectively, in each case the Son being on the right of the Father, and the Holy Spirit to the left.

The intersection of the crosses at the ends of the altar have a sprig of oak and a lily,—both attributes of the saint to whom this church is dedicated.

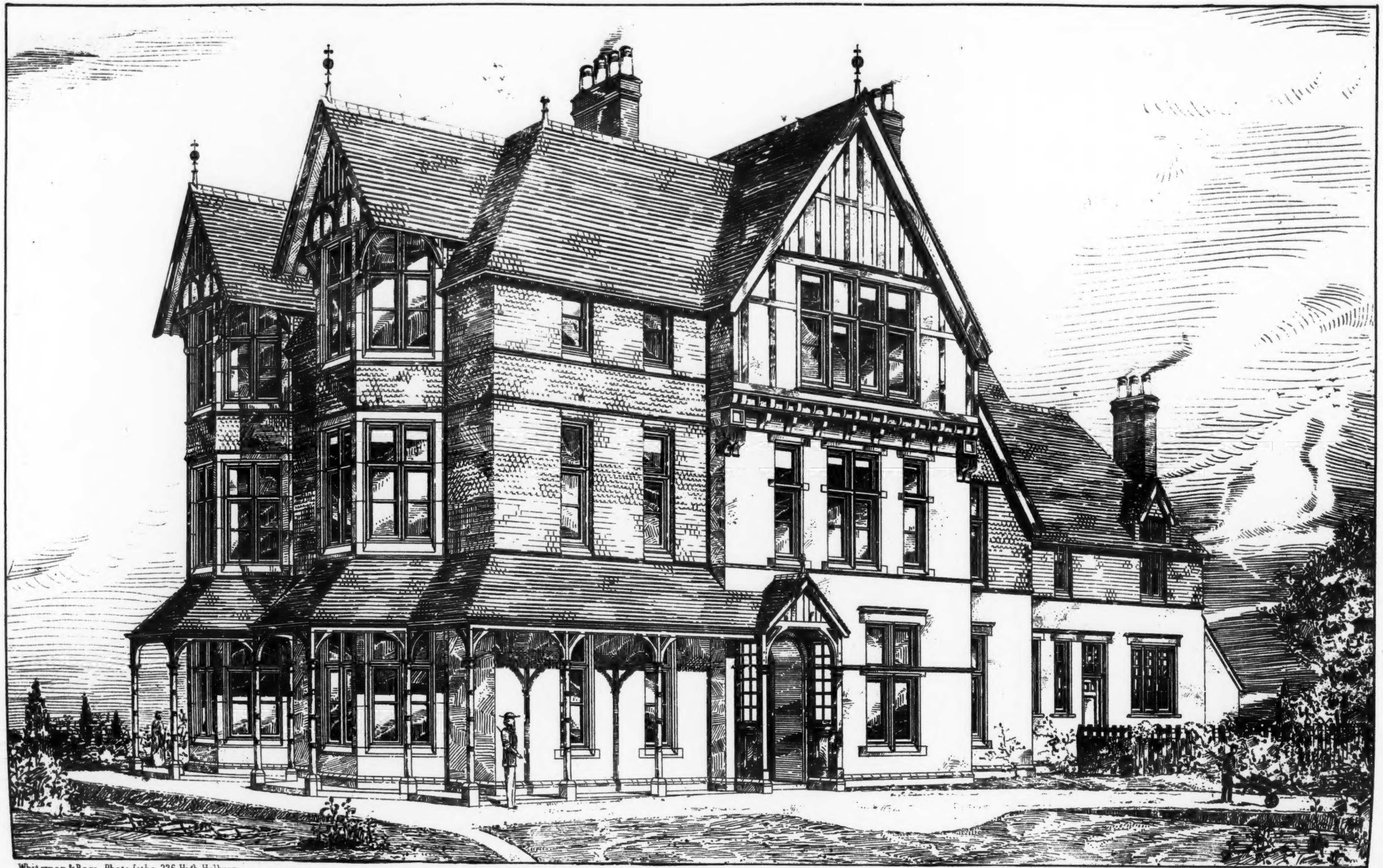
The more important carvings are contained in the pilasters, which we illustrate to a larger scale.

The series commences with a symbol of the Fall, viz.,—the apple with blighted leaves, the Serpent issuing therefrom, a dragon-fly likewise being introduced. Then follow the lily, oak, olive, pomegranite, passion-flower, palm, vine, corn, holly, fig, and yew, all of which will be readily understood. The groundwork is of picked English oak; some of the mouldings are of tulip-wood, the sunk panels being of rich pollard; the crosses are of holly (forming a strong contrast to the background).

All the carvings are well executed in ebony, and are in *alto-relievo*. The cover or frontal, of crimson velvet, is edged by a string of lilies and buds, alternating, and embroidered in natural colours, the orphreys to correspond; a deep fringe completes the work.

The table, which is an admirable specimen of the woodworker's art, was made by Messrs. Cragg & Chrystall from drawings and under the supervision of the architect of the church, Mr. Heffer, now of Kilburn; and it was the gift of the late Mr. Thomas James, of Wavertree, the frontal being beautifully wrought and presented by his daughters.

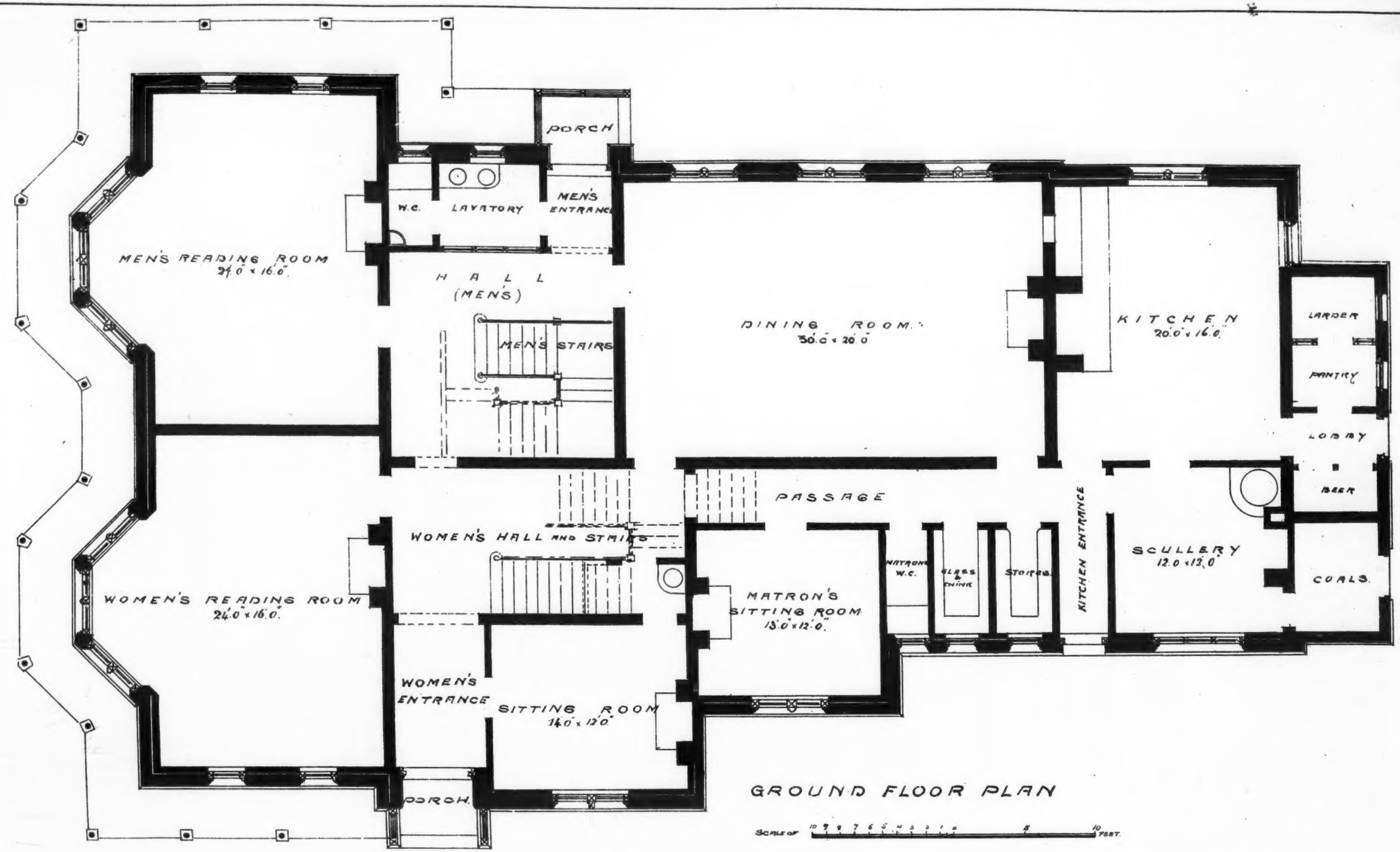
The Employers' Liability Assurance Corporation.—The time for sending in applications for shares in this corporation expires on Monday next, the 14th inst. Our advertisement columns show that the primary object of the corporation is to enable employers of all kinds to protect themselves by means of assurance against the liability imposed upon them by the Employers' Liability Act of 1880. It must not be confused with the proposed company of which we spoke in our last.



Whiteman & Bass. *Photo-Litho* 236. High Holborn.

Wyman & Sons, Printers, Gt Queen St

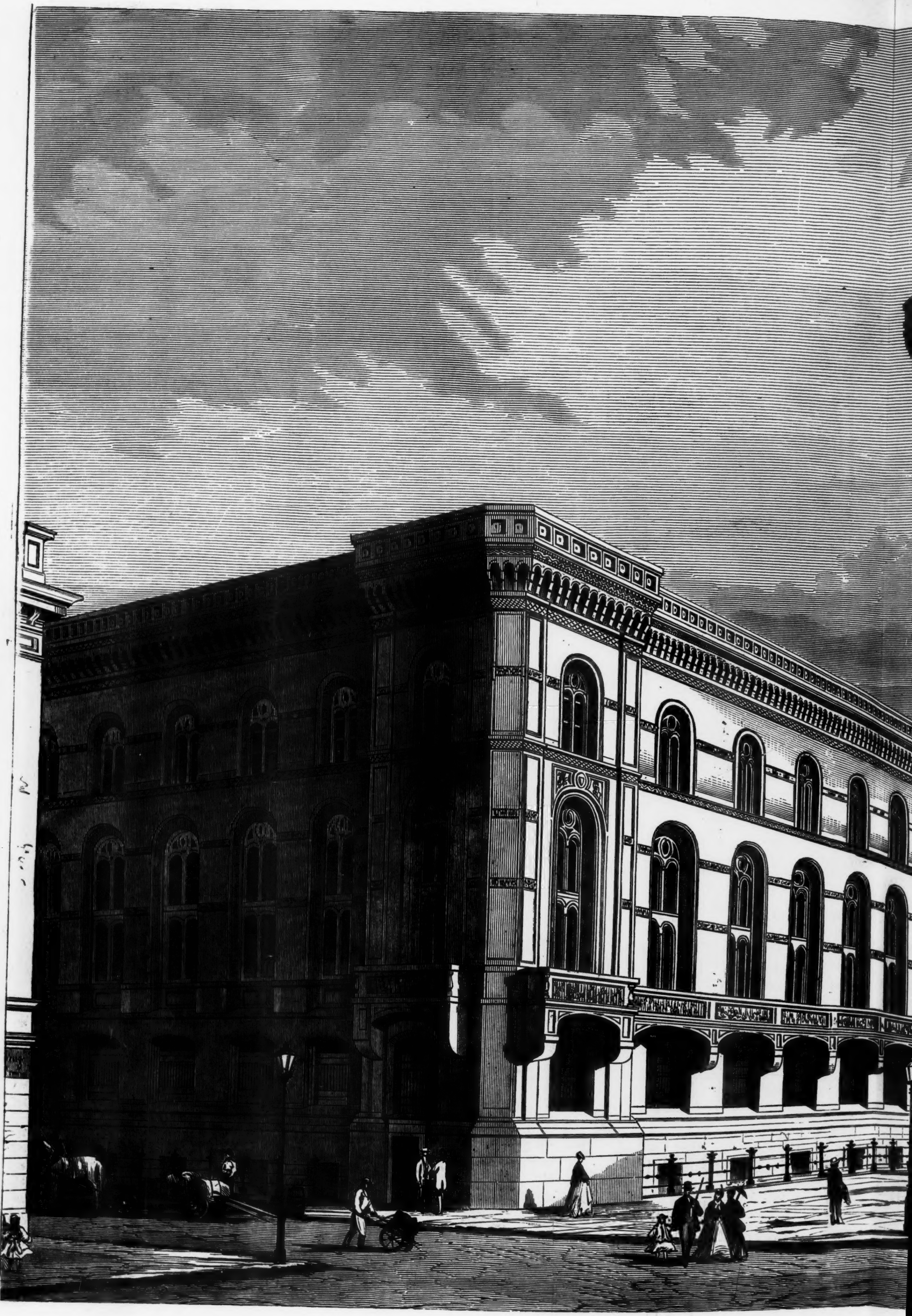
THE HERTS CONVALESCENT HOME.——MR. THOMAS CHATFEILD CLARKE, ARCHITECT.


PORCH
MEN'S ENTRANCE
W.C.
LAVATORY
MEN'S READING ROOM
24.0 × 16.0
HALL
(MEN'S)
MEN'S STAIRS
DINING ROOM
30.0 × 20.0
KITCHEN
20.0 × 16.0
LARDER
PANTRY
LOBBY
BEER
PASSAGE
KITCHEN ENTRANCE
SCULLERY
12.0 × 13.0
COALS
MATRON'S W.C.
GLASS & CHINA
STAIRS
WOMEN'S HALL AND STAIRS
MATRON'S SITTING ROOM
13.0 × 12.0
WOMEN'S READING ROOM
24.0 × 16.0
WOMEN'S ENTRANCE
SITTING ROOM
14.0 × 12.0
PORCH
GROUND FLOOR PLAN
Scale of 10 9 8 7 6 5 4 3 2 1 0 5 10 Feet.

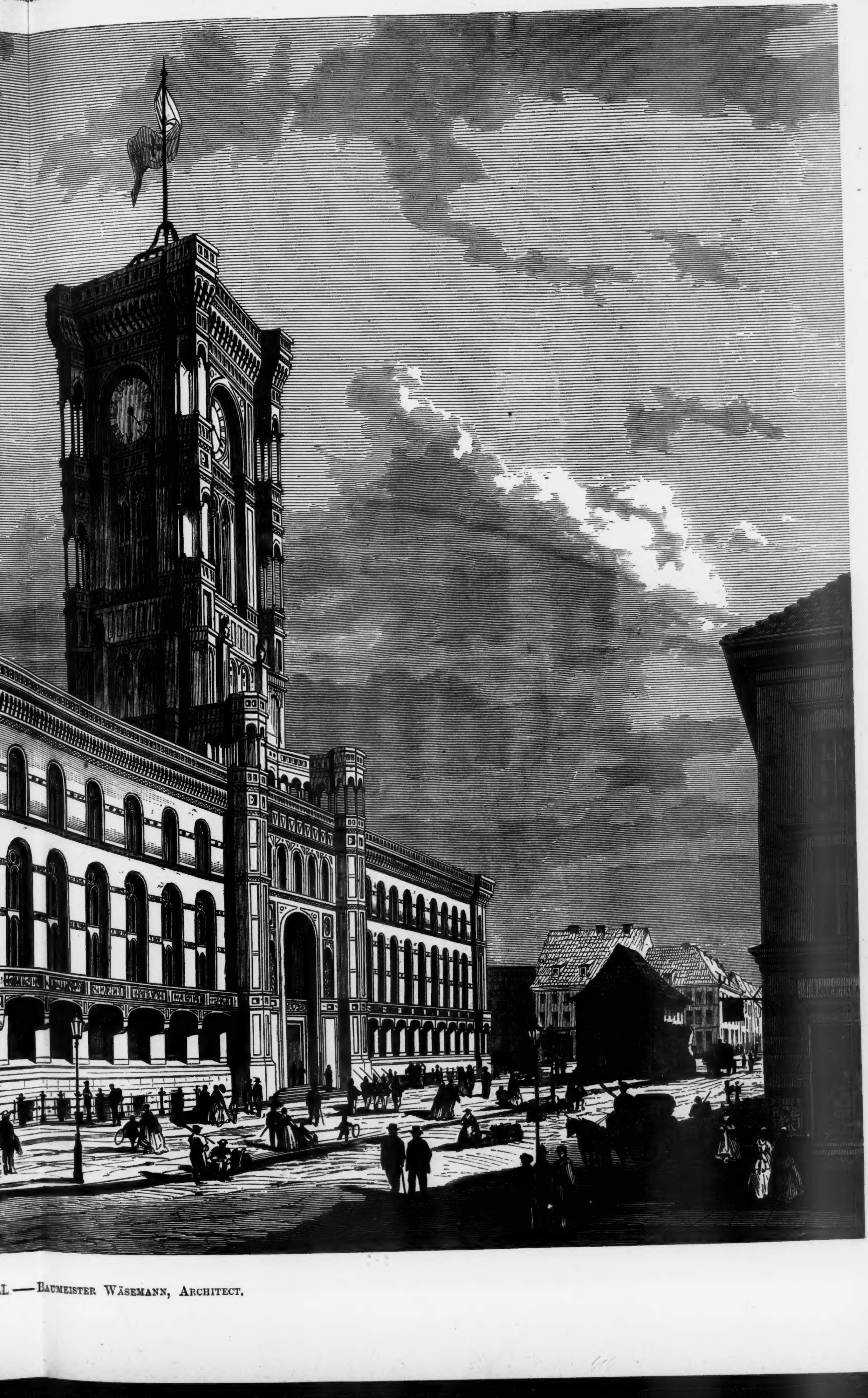
Whiteman & Bass, Photo-Litho 236, High Holborn.

Wyman & Sons, Printers, Gt Queen St.

THE HERTS CONVALESCENT HOME.

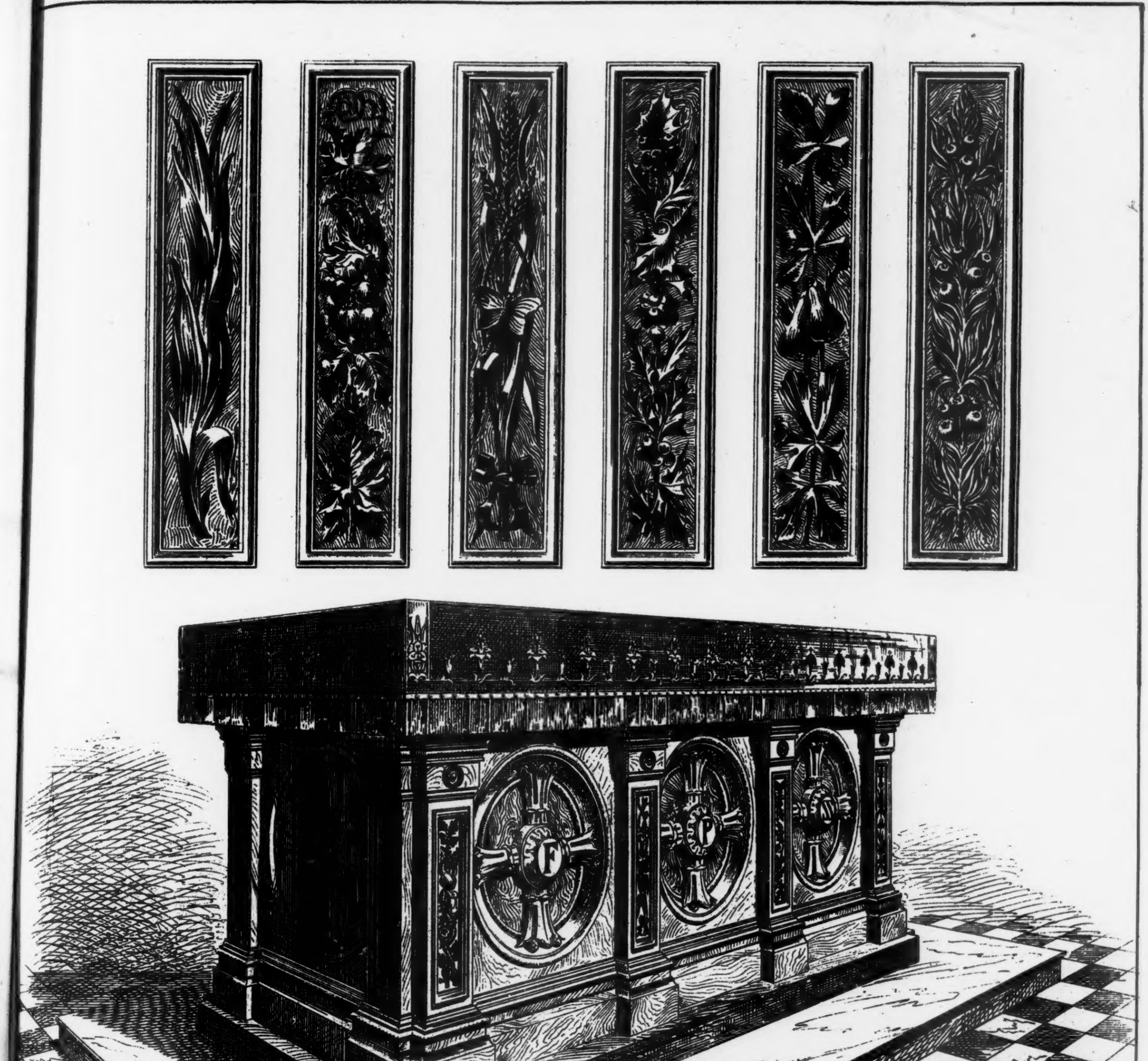


THE BERLIN TOWN HALL.—Baumeis



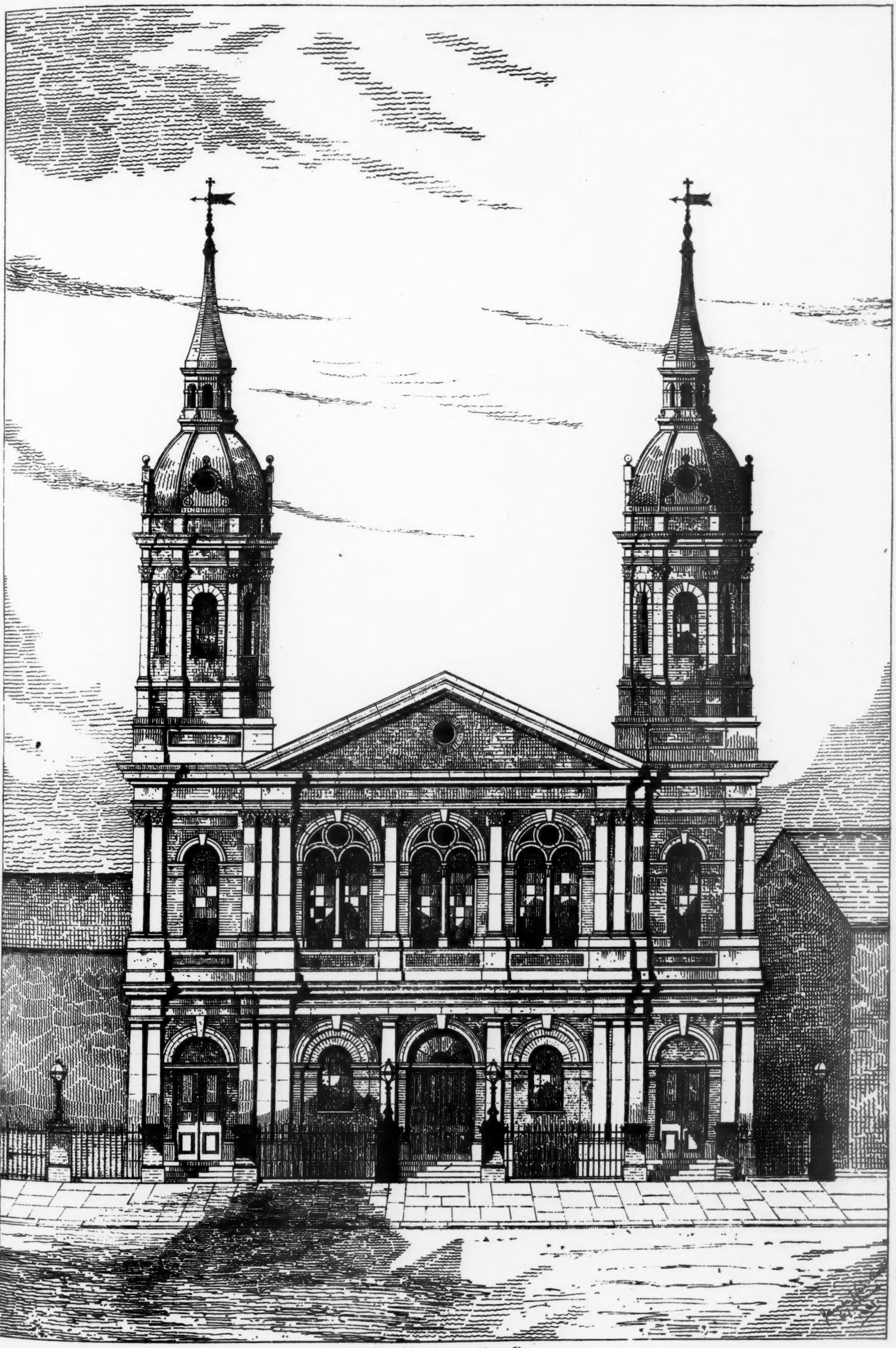
L.—Baumeister Wäsemann, Architect.

Whitema



Whiteman & Bass, *Photo-Litho.*
Wyman & Sons, Printers.

ALTAR-TABLE, ST. BRIDGET'S CHURCH, WAVERTREE, LIVERPOOL.



Wyman & Sons, Printers, Gt Queen St

WESLEYAN CHAPEL, QUEEN'S-ROAD, WANDSWORTH-ROAD.—MR. JAMES WEIR, ARCHITECT.

T
abl
arc
but
Cha
cer
tec
the
blu
of t
of t
int
sur
nec
the
les
ha
no
tec
go
dw
fes
the
wi
an
ca
of
he
of
wh
be
in
of
tir
th
ha
lai
Ti
ha
th
th
re
al
m
sc
m
to
ce
b
th
t
w
b
T
p
th
r
fr
e
lo
m
a
th
is
d
w
T
h
o
T
t
s
r
b
a
a
g
li
c
a
c
t
o
f
s
i
g
T
r
t
c
o
t
r
d
T
n
l

ARCHITECTURE AMONG THE MOUNTAINS.

THE naturally fine taste of Wordsworth enabled him to appreciate the ancient cottage architecture of Cumberland and Westmoreland, but could not save him from praising Rydal Chapel, which, as a piece of architecture, is certainly contemptible. Infallibility in architectural criticism, however, does not exist, and the most skilled in it often make the worst blunders. The ancient cottages and farmhouses of the Lake district have, indeed, distinct merits of their own; their chief merit, perhaps, is the intimacy of their alliance with the spirit of their surroundings. Built by men, and to meet the necessities of men, they almost look as though they were the handiwork of Nature herself; at least, it would be hard to say how she could have exhibited a more appropriate skill. The noblest buildings of the golden age of architecture are not more right in the principles that governed their design than are these humble dwellings in their restricted range. No professed architect was ever called in to determine their forms; if you ask who built them, you will be told that they are the work of the cotters and farmers of long ago, who were as handy at carpentry and mason-work as their descendants of to-day. It would seem, then, that we have here what looks like a distinct and native type of rural architecture—the exemplification of what cottages, and farmhouses, and barns should be in a mountain district, if they are to be in harmony with, and to enhance the attractions of, their locality. Certainly he who prizes continuity in the pleasures of the eye is indebted to those forgotten builders. It will not be their handiwork that will ever rudely break the spell laid upon him by a beautiful and noble district. Till within a few years, these old buildings have had their valleys and mountain sides wholly to themselves since the days of Elizabeth, and as they have decayed away they have been restored, but after the traditional models. Now, alas, there are new-comers amongst them, the modern cottage and more objectionable modern schoolhouse, erections that have nothing in common with the old dwellings, but serve as a foil to set off their merits. This is strikingly the case at Town End, in the valley of Troutbeck, but the same thing is to be observed all through the district. If ever there was an architectural treatment, we repeat, in thorough agreement with the surrounding landscape, it is surely to be found in these memorials of a primitive age. They exhibit, in their degree, the same simplicity, stability, and repose, as the mighty hills that tower above them. Tiny they may be, and rude, but they are far from contemptible. Apart from their special human interest, they are every whit as much in "keeping" with their localities, to use a technical expression, as the mighty fragments of shattered rock that lie about everywhere, breaking the monotony of the mountain slopes. You see at a glance (that is, if you are familiar with the district) the conditions that have dictated their position, height, width, thickness of walls, and disposition of parts. They are never more than two low stories in height, for they have to stand against the fury of whirlwinds, and the heaping of the winter snows. Their walls are of unusual thickness, built of the local stone irregularly coursed, some of the stones being of great size. They are generally roughcast on the outside. The chimneys rise but a little way above the heavily-slated roof, and though destitute of ornament, are thoroughly architectural. The majority are built upon the gable-walls, in front of which they project a little, and are strengthened beneath with a couple of plain corbels. Carried square till just above the ridge, they then either become circular, tapering to the top, or else are continued square, the square being set diagonally on its base. But on some of the cottages and farmhouses there is a central chimney of larger size and altogether greater importance. Usually it is cylindrical in form on a square base, tapering gradually to the top, or else almost pear-shaped. The cardhouse-like arrangement of flat and upright slates on the tops of some of the chimneys, to prevent the down-rush of the wind, is quaint, caricatured as it has been in the modern houses of the district. On many of the gable chimneys the date of the building is to be read, and when not there generally on the lintel of door or window. These dates range from 1600 to 1700 in Troutbeck, but many of the houses must be much older. The string-course that marks the level of the chamber-floor, and the hoods and drips over the windows, are not without good effect, formed as they are of two thin projecting courses of stone or slate breaking joint. The thick, square single course of the new houses is but a poor substitute for them. The new houses, planned apparently with small reference to the climate of an exposed mountain region, have discarded the substantial porch of masonry, with its arched entrance, that is an almost invariable adjunct of the old ones, and instead of that welcome shelter, offer a useless arrangement of timber-framing, shallow and open to every wind that blows. There is a particularly pleasing gallery-like addition to some of the old cottages to be seen in a good state of preservation in the village of Hartsop, at the foot of Brothers Water. The projection is usually made above the entrance-door, with beams that rest upon the house wall, supported at intervals from the ground with uprights that sustain as well the roof above, which is prolonged from the main one. Open at the front and end, this gallery is ornamented with a quaintly-cut and carved balustrade, and access to it is by a flight of steps at one end. Thus a sheltered space is gained in addition to the usual accommodation, which at this time of day seems only to be used as a storage for lumber. But in the days of the spinning-wheel, where was there a better place than here for the busy house-wife in the summer heat? Many a happy grouping of parts, dear to the architectural eye; many a really graceful feature, hardly hoped for, will be the reward of any one with sufficient time on his hands to visit thoroughly these ancient English dwellings on the mountain side and in the mountain valley. Like all good old things, they are passing away, and the new pattern cottage and farmhouse are shouldering them off the soil. He who cannot see the superiority of the old over the new, in this case at least, must be despaired of as a competitor in the race after really good architecture.

The interiors of these old houses are as characteristic as their exteriors. Certainly there could hardly be a more interesting interior than that of Mr. Brown's house at Town End. It has been much altered from its ancient condition, a new wing has been added, new windows have been inserted in the front rooms, and there have been changes besides; but the chief room of the house, the dining-room, where, so long as the old customs lasted, the farmer took his meals with his men in patriarchal fashion, remains much as it was two centuries and a half ago. It is a handsome apartment, large but low, and looks on to the quadrangle of which it forms part of one side, the ranges of ancient farm buildings and sheds forming the other three. The walls are lined with a considerable portion of old wainscot of good design, with delicately-moulded panels. An old oak seat, with a hinged top, runs the length of one side of the room under the windows, and a long oak table stands in front of it. Among the dates carved on some of the panels is that of 1672. There are some carved chairs of 1712. Among other vouchers of antiquity, there is a huge pile of family documents, reaching back to the reign of Elizabeth, and among their signatures is that of her minister, Burleigh.

S. D.

ARCHITECTS' BENEVOLENT SOCIETY.

THE thirty-first annual general meeting of this society was held on Wednesday last in the hall of the Royal Institute of British Architects, Mr. Henry Currey, Member of Council, in the chair.

The report, read by Mr. W. H. White, the hon. secretary, contained the following passages:—

> Many necessary and important changes have occurred in the arrangement and conduct of the Society's affairs.
>
> For many years the cordial thanks of the Council were annually tendered to the Council of the Royal Institute of British Architects for their liberality in providing accommodation for the meetings of the Society. Early in the last year this liberality was more fully extended and generously granted by the Council for the entire business of the Society being transacted within the walls of the Institute. Such a concession on the part of the Institute is most gratifying and of paramount importance, proving its appreciation of the object for which the Society was founded. Such a proof of sympathy cannot fail to augment its resources, extend its usefulness, and permanently secure its prosperity. The whole of the books and most of the documents belonging to the Society are now lodged at the Institute, in the care of Mr. William H. White, the Secretary of the Institute, who was last year elected Honorary Secretary of the Architects' Benevolent Society, and who in fulfilling the duties devolving upon him, has simplified the business and judiciously curtailed extraneous expenditure.
>
> For greater convenience in obtaining the receipt of subscriptions and donations, the Council have removed the Society's banking account from the London and Westminster Bank in the City to Messrs. Herries, Farquhar, & Co., in St. James's-street; and to dispense with the services and payment of a collector, printed forms have been issued and will be sent to each member of the Society to fill up and order his banker to pay his annual subscription to Messar. Herries & Co. The forms can be obtained at the Royal Institute of British Architects. . . . .
>
> The difficulty of ascertaining particulars of some of the applications for relief, and the justice of claims thus made, has lately induced the Council to seek the assistance of the Charity Organisation Society. That society, it is well known, by the aid of its Local Committees sitting in various parts of the metropolis and in great provincial centres, is in a position to afford reliable information as to the actual condition and often the antecedent career of applicants for relief. . . . .
>
> The number of cases relieved by the Society during the past official year has been twenty seven, and the amounts given reach the sum of 400*l*. These cases include applications from Scotland and Ireland, as well as the metropolis and various parts of England.
>
> The death-roll during the past year has deprived the Society of several well-known members. The President (Mr. Thomas H. Wyatt), Mr. Benjamin Ferrey, and Mr. John Henry Hakewill, three of the earliest contributors, passed away in August last. Mr. Wyatt's active and zealous exertions in promoting the welfare of the Society obtained by his influence a large pecuniary addition to the funds; besides, he was a most liberal contributor himself. His valuable advice, so freely bestowed on the affairs of the Society, combined with his courtesy in presiding at the Council and general meetings, will long be cherished by all who were associated with him. Mr. Wyatt, testifying his large appreciation of the Society's usefulness, bequeathed 100*l*. to the funds; and towards the close of 1880 a small legacy was received from the executors of the late Mr. E. M. Forster.
>
> The Council of the Society, at an early meeting after Mr. Wyatt's decease, requested Mr. John Whichcord to undertake the office of Chairman; he promptly and kindly acceded to the desire of the Council, and has presided with much advantage at the meetings of the Society, giving his constant attendance, and being ever ready to further the objects and interest of the Society's affairs. Mr. Whichcord has been a contributor to the Society's funds since 1851.
>
> At the close of the official year 1880-81, the funded property of the Society, invested in New Three per Cent. Consolidated Annuities, amounts to 5,453*l*. Over and above the dividends received from this, the total income of the Society from subscriptions barely exceeds 300*l*. The number of subscribers and donors during the past year is less than 250, and these are principally recruited from the Institute. Yet, though the professional members of that body now number nearly 800, only 140 Fellows and Associates contributed to the Society's funds during the year 1880.
>
> Considering the increasing numbers entering the profession, and considering the many practising architects in the populous cities of the United Kingdom, the Council trust it will not be in vain to earnestly impress on contributors the necessity of obtaining additional subscribers and donors to the Society's funds, remembering that all who run a race cannot win,—that distress, disease, and affliction may overtake the most prosperous, and compel many a professional brother, his widow and children, to seek assistance from the Society to alleviate the sad consequences of such reverses.

On the motion of the chairman, seconded by Mr. Ewan Christian, the report and balance-sheet were unanimously adopted.

The meeting then proceeded to consider the revision of the by-laws, and, on the motion of Mr. J. Macvicar Anderson, seconded by Mr. Edwin Nash, the revised draft was unanimously adopted, and the president, treasurer, and honorary secretary were requested to edit the by-laws prior to their being submitted for confirmation by a meeting to be convened for the purpose.

On the motion of the chairman, seconded by Mr. G. J. J. Mair, Mr. John Whichcord was elected President of the Society; and on the motion of Mr. Charles Fowler, seconded by Mr. Lewis Solomon, Messrs. E. N. Clifton, E. A. Grüning, E. I'Anson, Geo. Scamell, and Thomas Wells were elected members of the Council, in lieu of Messrs. Horace Jones, D. Mocatta, A. Waterhouse, A.R.A., J. S. Phené, and J. Macvicar Anderson, who retired by effluxion of time. To fill the other vacancy on the Council, caused by the election of Mr. Whichcord as president, Mr. Matt. Wyatt was, on the motion of Mr. Solomon, seconded by Mr. Fowler, unanimously elected.

On the motion of Mr. Arthur Cates, seconded by Mr. Ewan Christian, Mr. Geo. J. J. Mair was elected treasurer, and Mr. W. H. White having been elected honorary secretary, it was resolved to ask Messrs. R. R. Arntz and John H. Christian to serve as auditors of the Society's accounts for the coming year. The proceedings terminated with a vote of thanks to the officers and Council for their services during the past year.

A "Ruskin Society" for Sheffield. — A meeting was held on the 28th ult., at Mr. Hayball's, in Cavendish-street, to consider the advisability of forming a Ruskin Society, similar to what has been established at Manchester and elsewhere. The Rev. W. E. Darby, presided. After discussion, it was resolved,—"That a Ruskin Society, with the sub-title of 'The Society of the Rose,' be organised to promote the study and circulation of Mr. Ruskin's writings, to form a centre of union for his friends, and to aid his practical efforts for social improvements."

EXTENSION OF THE PRINCIPLES OF DESIGN OF THE GREAT PYRAMID TO SECOND AND THIRD PYRAMIDS.

Sir,—I have hitherto confined my results to the Great Pyramid,* but I now propose to state shortly the extension of the principles of its design to the second and third pyramids.

The sides of the base of the Great Pyramid were determined to be 440 cubits (of 5 hands),† and the height 280 of such cubits, the proportion being as 11 to 7.

440 − 30 = 410 cubits = 8,487 in. = 707 ft. 3 in. which gives the original extent of the sides of the base of the second pyramid, and we have only to halve these quantities to get the dimensions of the third pyramid, viz.:—

205 cubits = 353 ft. 7½ in.

These several determinations agree very well with the measures of Colonel Howard Vyse, which are:—

Side of base of second pyramid 707 ft. 9 in.
„ „ third „ 354 ft. 6 in.

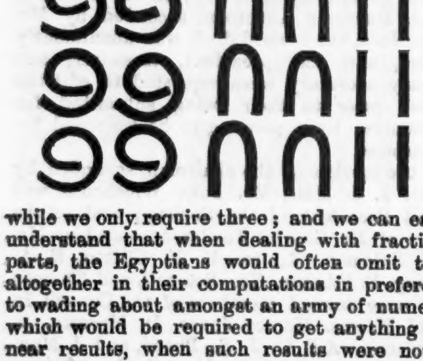
As regards the altitude,

$$\tfrac{440}{5} = 88 \qquad \tfrac{280}{5} = 56$$
$$\tfrac{410}{5} = 82$$
$$88 - 82 = 6$$
$$\text{Now } 6 : 3 :: 11 + 1 : 7 - 1$$

and (56 − 3) × 5 = 265 cubits, or 457 ft. 1½ in. for the height of the second pyramid, corresponding to an angle of 52° 16½′. The angle given by Vyse is 52° 20′.

The above method was apparently varied in determining the inclination of the third pyramid; for Vyse gives it as 51°, otherwise it would have had an altitude of 132½ cubits, but his angle requires that it should be about five cubits less. His values, however, for the fifth, seventh, eighth, and ninth pyramids (the fourth and sixth being in steps) come pretty near the angle calculated as above, varying from 52° 15′ to 52° 10′, any actual difference being doubtless due to the rounding off of troublesome fractions when going from one number to another in similar designs.

Owing to the cumbersome notation of the Egyptians, they would be sure to deduce their proportions by simple means, provided such means led to, practically, similar results. As an instance of the unsuitableness of their notation for mathematical calculations, the number of the Beast ‡ (666) would require eighteen characters to express it, thus:—



while we only require three; and we can easily understand that when dealing with fractional parts, the Egyptians would often omit them altogether in their computations in preference to wading about amongst an army of numerals which would be required to get anything like near results, when such results were not of great importance.

That the number of the Beast was a mathematical number will, I think, occur to any unprejudiced mind; but it has become so clothed in myth that its original significance is entirely lost.

My authority for the Egyptian numerals is Wilkinson. W. Hayden.

The Institution of Civil Engineers.—The Friday evenings in March have been devoted by the Council to the reading and discussion of papers by students of the Institution, the subjects to be dealt with being as follow:—March 4th, "An Account of the Erection of an Iron Promenade Pier at Skegness," by Alex. Bremner; March 11th, "Caissons for Dock Entrances," by D. Macalister; March 18th, "Steel: its Chemical Constitution and Behaviour under Tensile Strain," by A. S. Vowell; March 25th, "The Improvement of the Old Harbour at Holyhead," by E. Walter N. Wood. The chair will be taken at seven o'clock on each evening, and successively by Mr. Giles, Sir John Coode, Dr. Siemens, and Mr. Abernethy, President.

---

* See letters in the *Builder*, 16th of June, 1877; 22nd of February, 1879; and 29th of January, 1881.

† This cubit = 20·7 inches.

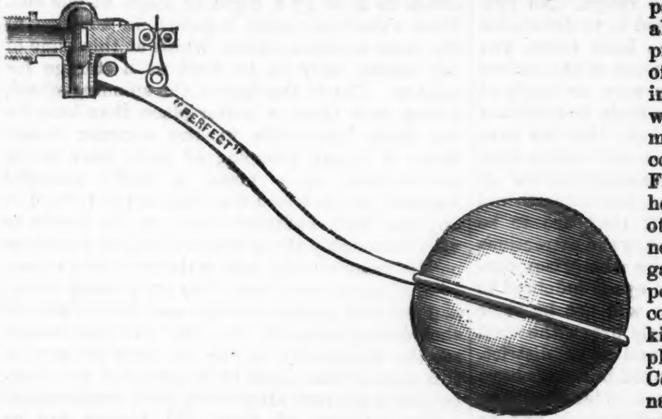
‡ See Revelation xiii. 18, 19.

OBITUARY.

Professor Tennant.—We have to record the death of Professor Tennant, F.G.S., mineralogist to her Majesty, of 149, Strand, aged 73. From the first foundation of King's College, Strand, he had held the chair of mineralogy. From the time of his connexion with the Turners' Company, as a member of the court, and holding the offices of warden and master, his energy and application gave an impulse to the cause of technical improvement. He was the author of, among other works, a "Treatise on Geology, Mineralogy, and Crystallography" (jointly with Professors Ansted and Mitchell), and of "Art Gems and Precious Stones."

DAVID YOUNG'S PATENT BALL VALVE

The chief feature of this ball-valve is the wedge, which is connected to the short arm of the lever by a suitable joint. The illustration shows a valve fitted with two friction-rollers, a pin being inserted in the plunger and fitting into a slot in the valve-box to prevent the plunger from turning round. For all ordinary pressures the friction-roller in the plunger may be dispensed with, the plunger being slightly rounded at the end and left free to turn round. For high pressures a small recess should be turned on the plunger to receive packing, so as to prevent the water from being forced out around it. It is claimed for this valve, amongst other advantages, that it is very steady and reliable in its action; that no sudden increase of pressure in the main can force the valve open while the tank is full; and that it can be depended upon to close against the highest pressures.



THE PARTICIPATION BY THE WORKMEN IN THE PROFITS OF ENTERPRISE.

A paper on this subject has been read at the Society of Arts by Mr. Sedley Taylor, M.A., and discussed during two evenings. Full reports will be found in the *Journal* of the Society, February 18th and February 25th. Mr. Taylor at the close of his paper said,—

Before sitting down, I desire to make a practical suggestion to which I attach considerable importance. It is manifest that before participation can be extensively tried in this country with good prospects of success, the results attained on the Continent must first have been adequately studied both by English employers and by English workmen. Now, what are the means as yet provided for pursuing this study? In the spring of 1879, a society composed of employers engaged in industry or commerce was established at Paris, having for its sole object to facilitate the practical study of participation in profits. This society has already published in its periodical *Bulletin* the regulations of the most important participating houses, and has assembled in its library a mass of unpublished rules in force in the less conspicuous establishments. It is now bringing out in a French translation, with the author's latest additions, the work of Böhmert, which is a real mine of trustworthy information, particularly as to results obtained in Germany. Clearly, therefore, an inquirer who wishes to make a practical study of the subject may derive the greatest assistance from the French society. He finds abundant matter in its publications, and, should he desire further information on points of detail, has only to place himself in communication, through its officers, with the heads of houses abroad whose systems he may desire to investigate. But these facilities are as yet restricted to students possessing a good knowledge of French, and a not inconsiderable stock of leisure. In order that they may be effectively thrown open to all classes in this country, means must be taken for publishing, in plain readable English, and at a low price, the most essential facts which have been ascertained by continental research. The work might well be undertaken by a special society, which should endeavour to facilitate in England the practical study of participation, whose objects and whose title should, in fact, be identical with those of the French society. Such an association would disseminate trustworthy printed information, promote the reading of papers, the delivery of lectures, the holding of discussions, and generally seek, by every available means, to spread sound knowledge on the subject with which its operations were concerned. It would also serve as a bond of union and mutual support between such English houses as gave an actual trial to participation, and between all persons interested in the progress and development of that principle. A very important feature of its work would obviously be the maintenance of close and cordial relations with the French society, and with the heads of the movement in other parts of the Continent. In order roughly to gauge the amount of support likely to be forthcoming for a scheme of this kind, I should be very pleased to receive, at Trinity College, Cambridge, the names and addresses of any person, whether occupied or not in industrial or commercial pursuits, who were such a society to be called into existence would be disposed to join it.

ARCHITECTS' ACTIONS.

PARAIRE *v.* LOIBL.

This was an action, before Lord Coleridge and a special jury, which arose out of the improvements now being carried out by the Metropolitan Board of Works in Tichborne-street, and was for work done and services rendered by the plaintiff for the defendant, for which he now claimed 1,191*l.* 0s. 1d. The defendant paid 221*l.* 13s. 8d. into Court as a sum sufficient to meet all the plaintiff's claims against him.

Mr. C. Russell, Q.C., and Mr. Anderson appeared for the plaintiff; and Mr. Philbrick, Q.C., Mr. Alfred Cock, and Mr. Lewis for the defendant.

It appeared that the plaintiff, who is an architect, was at various times employed by the defendant, M. Emil Loibl, the proprietor of the London Pavilion, to prepare certain plans and specifications for the alteration and improvement of his music-hall. In 1878 the Metropolitan Board of Works gave notice to M. Loibl that they intended to take and purchase these premises. The defendant's claim for compensation on this account was referred to Sir Henry Hunt and two umpires for arbitration, and he was finally awarded 109,000*l.* This large award, the plaintiff alleged, was in some part due to the careful plans and drawings made by him of the premises, and also to his valuable evidence on the case as an expert in such matters. He based his charges on the prevailing practice of his profession in like cases at 10s. 6d. per cent.

Lord Coleridge observed as to this basis he would not hear of it,—it was merely a question of *quantum meruit.* No body or society had any right whatever to fix their charges at certain sums, and say they were to be paid. The more he saw of this case the more he felt it was one which might be settled.

After a conference between counsel,

Mr. C. Russell said he would take a verdict subject to a reference.

Verdict accordingly.

Architectural Association.—At the ordinary general meeting of this Association, held on the 4th inst., Mr. E. B. I'Anson, Vice-President, in the chair, on the motion of Mr. Eales a vote of thanks was accorded to Mr. E. R. Robson, Architect to the School Board for London, for accompanying a number of the members over the new Board School at Queen's Park Estate, Harrow-road, as described in our last. It was announced that the next visit would be made this Saturday, the 12th, to the new Marylebone Infirmary, at the back of Ladbroke-grove-road, by permission of Mr. H. Saxon Snell, the architect. Mr. William White, F.S.A., then read a paper on "Cheap Churches," which we print on other pages, but defer a report of the discussion which followed.

CHEAP CHURCHES.*

THE title of my paper is one which demands no apology. It may require explanation; for it is one which is likely to give offence to some whose affectation or sense of superiority will allow them to associate it only with a vulgar expression which they consider carries with it its own condemnation,—an expression often foolishly made and misapplied. Speak of a thing being cheap, or of some mode by which it may be cheapened, and it will inevitably suggest to them some connexion with the nasty. A sneer may be a very cheap and nasty way of asserting superiority to such vile and common considerations as mere money value, or the inconvenience attending a virtuous economy. But an article may be cheap without being nasty, or nasty without being cheap. The greatest discrimination is sometimes necessary in order to arrive at a true judgment. Only knowledge and experience will enable us to make the most of ordinary opportunities and of available means for securing a satisfactory result. Great prudence and care may be required to guard against such "cheese-paring" as might endanger the stability, or impair the usefulness, of a building, in respect of its arrangement and purposes. But this is no legitimate reason against cutting down expense to a minimum, if the exigencies of the case require it. The nature and character of the work must largely depend upon its special circumstances.

Now, in opening up the question of cheapness in building and architecture generally, I must ask you to bear with me if I should seem to digress a little from the specially practical consideration of the subject of cheap churches, to which our President has asked me to devote myself.

Some years ago I had occasion to make a remark at the Institute upon the need, which sometimes would arise, of dealing with the question of cheapness in buildings, and of endeavouring to impart to them something of a true architectural form and character in spite of impoverished construction and of limited means. A well-known member, in his most plausible and persuasive tones, gave utterance to the sentiment to which I have alluded. To him it was wrong for a man who professed himself an architect to give in to the erection of a building of any sort with insufficient means. Instead of promoting the cause of construction, or of design, it could only bring discredit on his work, on his profession, and on himself, to put up a building which should show any symptom of weakness, whether in its construction or its design. Excellent sentiment, happily requiring no refutation! It is a mere *petitio principii*, leaving entirely untouched the measure or the test, whether of insufficient means or of weakness in construction. It must not be denied, however, that there is in cheapness a danger of bringing our work into degradation, and ourselves into discredit and even disgrace; namely, the fictitious, delusive, spurious sort of economy derived from competition. If we begin to vie with each other in cheapness, we shall soon lose sight of the true ends of an equitable and reasonable economy, and shall have to extend our competition to that sort of superficial display which is destructive of true principle, and must result in disappointment to all concerned, with here and there, possibly, an occasional exception.

For success in treatment and design we want, not the impetus of sordid motives, but the fire of enthusiasm for the thorough practical study of our art, so admirably insisted on by Mr. Street in his opening lecture at the Royal Academy. Without this we shall never get beyond respectable mediocrity. And for the purposes of economy we want the most thorough knowledge and grasp of construction, and of the value of all available material, in order to provide against the wasteful use of such as might be expensive in convertibility, carriage, or labour. And neither of these stepping-stones to success can be reached without long and patient labour. I have more than once known of a large expense being incurred, in one case by the introduction of red bricks from a distance as being more lively than the common stock; and, in another case, and actually at the same, by the introduction of common stocks from a similar distance on the ground of the red brick being so dull. Architecture can no more be produced without expense than can the steam-engine be propelled without fuel. The quantity of steam required to propel the engine is a question of degree; and the one must be duly proportioned to the other. The æsthetical properties of a building consist in its architectural form. This form legitimately may, and very often must, be restricted by considerations of expense; and sometimes the barest construction compatible with security may be necessitated. With restricted resources it would be actually inconsistent with the ends or objects to be attained, I will not say to attempt an ornamental treatment or purely architectural conception, but to expend upon its construction, or upon the substance of its material, more than is absolutely needful. It may be a troublesome, thankless, and responsible task; but it may be nevertheless one of the gravest duties, one of the greatest difficulties and responsibilities which the architect is called upon to encounter. To shirk the obligation on the ground that funds are insufficient to do credit to his reputation or to his powers of design may or may not indicate a really high-minded course. In any case it is very like saying that it is no good for an employer with insufficient means to come to an architect at all; whereas, on the contrary, it might reasonably and properly be presumed that insufficiency of means may be the very reason why an architect should be called in, in order to make the most of available means, though at the same time it may prove to him but an unprofitable piece of work. In order to make the most of the means and circumstances of the particular case, he may have to face rather than shrink from the risk and the responsibility of advising with confidence as to where the line may safely be drawn.

It is the idle and untaught apprentice who complains of his tools and throws down his work, not the master of the craft. When difficulties arise it is he who is specially sought out to meet them. The ordinary individual, with fair ability and reasonable means at his disposal, may secure safety, if not a certain amount of success. But it requires considerable courage, circumspection, knowledge, and experience to enable a man to face difficulties with success. No man is justified in risking, much less in courting failure, with his eyes open; and it is better for him to decline a work than to fail in it, although the higher course may be to face the difficulty, and to succeed. If he have any self-respect or sense of responsibility, he may have to give up work rather than pretend to guarantee its cost coming within a certain limit. But this does not free him from the responsibility of judging what that limit of cost is likely to be, and of undertaking a work or declining it in accordance with his judgment. It may be very well and very laudable for any one to act in a high-minded and independent manner, but surely it is no discredit to an architect to do conscientiously his best with small means. It would be a discredit to him to induce an employer, from whatever motive, to lay out more than he can pay for, or more than the circumstances of the case may fairly justify or require. I wish I could truly say that, especially in cases of limited means, the employers were always as reasonable, careful, and considerate as I believe the architect ordinarily to be in fulfilling his obligation. I refer to this branch of our subject thus plainly, because the profession has sometimes been accused of endeavouring to do needless and uncalled-for work, for the purpose of making his charge, or of increasing the outlay, for the very purpose of increasing the amount of his commission. This accusation has been laid not only by ignorant and unscrupulous persons, but by those whose expression of opinion and practical acquaintance with the world ought to be considered above suspicion.

I remember hearing an allegation directed against architects, as a body, that such was their practice. It was advanced by a young surgeon, who made no scruple or secret of his own practice in administering bread pills in order to satisfy his unconscious patient that he was really giving him medical treatment. Far be it from me to deny that this quasi-medicine was better and safer than any genuine physic that he could himself have prescribed. I have understood that in certain cases of hypochondria or nervous debility, such deception has been considered by intelligent and trustworthy men as not only innocent, but necessary,—or at least wise and expedient,—under certain exceptional circumstances. But proclaiming the fact in public, and making, as it were, a boast of thus bleeding his victim, did not seem to me likely to inspire other patients with confidence in him, whilst it appeared to reflect discredit on himself personally, rather than upon that most honourable body which he took little pains to adorn.

Why it should be supposed to be the nature of our profession to be dishonourable,—to put others to expense in order to enrich ourselves, supposing there to be well-authenticated instances of it,—I cannot conceive; or why it should be of greater advantage to us to ruin or to cripple our clients than it is to the doctor to kill his, remains to be explained. There are those who think otherwise, and taunt us with the fact that our commission is the larger the more we can induce people to spend. Probably they are profoundly ignorant of the fact that such increase implies and involves an amount of additional labour and expense, which may well make even the present pecuniary advantage of an unwise or of a reckless expenditure very questionable. As a matter of merit or of credit to the architect, there can be no question. But there is, perhaps, no more probable case in which difficulties may arise than in that of a cheap, or quasi-cheap, church. I speak of a quasi-cheap church, for all things are not cheap which may at first sight appear to be so. Many valuable articles are cheap on account of their very usefulness and perfection, which have made the demand so great as to facilitate their reproduction on a remunerative scale.

Cheapness is of various kinds, and it will not do to expect the same character or the same result in a cheap church as in an expensive one. Hence, as a guiding principle of obtaining cheapness, even the most persistent followers of precedent must aim rather at giving the building a genuine character of its own, than at endeavouring to impart to it the exact character of an old building of any definite style or period, which would make it but a mean and meagre imitation of something better. Still less must there be any striving after structural decoration. The ornamental details often introduced in an old building with great effect, well contrasting by their elegance and lightness with the surrounding massiveness, when found in a modern cheap building may serve mainly to call attention to the insult which it is not ashamed to add to the injury inflicted by poverty. Not that poverty is a sin or a disgrace. It may be a misfortune, and it may be the result of the highest merit, the residence of the brightest virtues; but poverty decked out in tinsel or trumpery ornament can only call attention to its own degradation.

I may seem to be merely moralising, but really I know not how to suggest for our guidance any general principle more practical than this, more to our own purpose, or more deserving of our attention. The doctor, however, after all, is still better than the parson. All acknowledge that practice is better than mere preaching. Genuine, earnest, and true practice, if more laudable, is more difficult than preaching, and it is no easy matter to reduce to practice that which I am endeavouring to lay down. There are those who, apparently deriding and despising all ideas of cheapness as a principle worth contending for under any circumstances, are yet content to advocate it under the more "genteel" name of economy and maintain that, for the perfection of the architectural development of the future, we must look to iron as our constructive material; because it will be the least costly, as well as the most available for enclosing large spaces, and thus affording greater scope for freedom, or perhaps it might be more truly called licence, in design.

In treating of cheap churches, however, it will be impossible to uphold iron as the grand desideratum. It will not serve as a fitting substitute for other material. There may be purposes for which it will be found useful as a constructive, rather than as a strictly architectural, material in their erection. What I have seen of iron churches has certainly not impressed me in their favour, in respect either of comfort, of cost, or of character, in proportion to the amount of accommodation provided.

There may be occasions when iron is useful for the purposes of a temporary church; but as a constructive material it is miserably thin in appearance, no less than in reality. Moreover, it is costly for removal and re-erection if required for putting up subsequently in another place, usually requiring a considerable amount of renewal and repair. I shall refer to detail of cost presently. We are now discussing general principles. Any amount of ornamentation of plain surfaces or mural decoration is quite compatible with the greatest simplicity of construction. It is, as it were, a matter of finishing and furnishing which is admissible in all cases. Whatever may be the material or the workmanship, the first consideration, and, in fact, that upon which the whole basis of calculation and of treatment must depend, is the superficial area or accommodation to be provided. It is relatively to this that all cost has to be determined. There is in this, likewise, great room for misleading calculations as to accommodation with reference to area, unless some very rigid intelligible standard is taken, such as 7 ft. area per person in a cheap mission church; 8 ft. or 10 ft., as the case may be, in a more permanent one, supposed to be for the given number of persons, into which, however, a great many more may be crowded, or a great many fewer admitted. When we speak of a building being cheap or not, it must be upon the supposition that it is necessary to make the most of available space as well as available means. This forms the practical and almost universally-received standard. But, supposing the erection of a building which is to be thoroughly monumental in its character, and strictly architectural in its design, it could not be called cheap at any price if it were cut down to a minimum in its form or proportion, in its material or construction, in its detail or finish. The relation which the cost must have to the structure to be produced depends, meantime, upon another most important consideration, viz., its proportion and relative height, or, in other words, its cubical contents. In any statistics which I may produce presently I shall give chiefly round numbers, avoiding fractions, which confuse rather than aid comparison.

---

* A paper by Mr. William White, F.S.A., read before the Architectural Association on the 4th inst., as elsewhere mentioned.

The popular idea that, in respect of cost, "style" is a more important factor than form, proportion, substance, material, construction, detail, or finish, has been a pernicious delusion. It has very often led ignorant people to insist upon the Early Pointed as the cheapest style, without taking into account the thickness of wall, and other characteristics, which form very material elements of expense; but, without which, it ceases to be a following of the style at all. And so, with other styles, and even with the Renaissance, or with the more pure Classic styles, the same holds good. Almost any amount may be expended equally on all the known or existing styles of architecture. It becomes only a burlesque of the style to carry out any one of them without the inevitable accomplishments of massive walls, fair proportions, forms and details, suitable to the proposed purposes of the edifice.

We will now look a little more closely into those various things upon which cost or cheapness does naturally and materially depend.

In the first place, let us consider form and proportion, which are essentially two different things, but are so intimately connected with each other in this branch of the subject that they almost must be taken together. Loftiness of proportion, which is necessary to grandeur or dignity of effect, and which is, at the same time, a material source of costliness, is one of the first things in a design which has to be considered, in order to keep cost within due limits. But great height is not in all cases desirable for use, as, for instance, in respect of hearing, lighting, or warming, and yet it may be desirable for the sake of proportion or for cubical content of air-space. The actual or the relative height of a building must depend very much upon the breadth of its respective parts, and it is evident that a steep roof over a broad building must run up to a considerable height. This brings us to the bearing of form or arrangement of structure upon this branch of the same question. I have often been pressed to plan a building with a plain parallelogram instead of with aisles or other adjuncts; and this, on the score of expense, amongst other considerations. To this I have usually replied that, on account of cost, I could not pretend to attempt it. By dividing it up into parts, such as a nave and aisles, the building assumes more manageable form with respect to height, as will be readily seen by taking the interior breadth for a proposed building, say at 35 ft. in a single span. In order to obtain anything like fair proportion, the walls could not be less that about 28 ft. in height, and, with a moderately steep roof, the ridge would rise to 55 ft. from the floor. It would be difficult to treat this, even then apparently depressed building, in such a manner as not to appear mean and bald. But divide it up, and you may have a nave 20 ft. wide, and walls still of the same height, namely, 28 ft., with the ridge 42 ft. from the floor, of good and lofty proportions (with far more impressive effect), and subordinate aisles not unduly dwarfed. Some might be inclined to call this an exaggerated case, but it is a simple and true illustration of the principle which I have, in fact, carried out into practice. About fourteen years ago I had the remarkable opportunity of re-building a modern church, of about twenty-five years old, at Holy Trinity, Barnstaple, which had failed partly from the insecurity of its foundations, and partly from the great pressure of the wind upon an ill-constructed roof of nearly 35 ft. span. I recast the design entirely, in the manner just indicated, retaining the total breadth of nearly 35 ft., and the height of the nave walls, 28 ft., but subdividing it into two aisles, and a nave of 20 ft. span. I exhibit, together with the working drawings, a diagram showing the outline of the new section relatively to that of the old. These drawings show how, with exactly the same height, the proportional height of the nave is greater and far better than that of the old, and how the objectionable proportion of the length of the rafter, which was as nearly as possible equal to the height of the wall, and the general baldness of interior effect, have been obviated. The cubical contents, as shown by the section of vertical area, have been reduced by about one-fourth. The general effect of height and spaciousness is as great as before, if not greater. It must be observed that this is not an illustration at all of a cheap church, but only of a most important principle in the direction of cheapness, namely, construction relatively to proportion, form, and general treatment. The appearance of the building in respect of form and proportion is a material consideration. It is true that there are pillars occupying a part of the available area, and to some extent forming an obstruction. But very few persons in a congregation find the interception of the pillars an obstruction to hearing and seeing so much as they do to other obstructions, such as distance, or accidental position, in a more spacious building. Apart from the cost, a building would be produced of form better adapted to almost all circumstances, except in the case of a building of unusual magnitude being really desirable, and of proportionate length and height, in order, for instance, to tower far above all surrounding objects in a crowded city. A great deal is said about the obstruction to sight and hearing, caused by pillars and arches, in an ordinary church. In respect of hearing, it is certain, at any rate, that the loss would be far greater through the cubical contents being doubled in the manner just pointed out, by having one large space; whilst in respect of seeing, it is equally certain that the majority of people prefer that which impresses them the most with a sense of fitness. I had once an unusual, though excellent opportunity, twenty-five years ago, of putting to a practical test the relations of cost to the simple parallelogram and to the subdivided church, and I availed myself of it. Two outlying chapels were to be built, within a mile or two of each other, in the parish of Andover.

The cost of material and labour and other conditions were precisely similar; the only differing circumstance being that one building, at Smannel, was built to accommodate 176 persons, and the other at Hatherden to accommodate 160. The larger church cost 648*l.*, and the smaller 700*l.*, to the great surprise of the committee, who wrote immediately for an explanation of the remarkable fact, all being prepared for the reverse. Unfortunately, I lent the plans of these churches, with some others, many years ago, to a clergyman, whose conscience, it would appear, did not allow him to return them. One can only conclude that, little as he might himself value them, he had a very slight notion of the value of such drawings to others. Even when, in vain, he was asked for them, no excuse or explanation, still less apology, was considered due. I am sorry to say this has precluded me from giving you proper illustrations of my most interesting examples, as I wished very much to do.

The same builders were invited to tender for both churches, at the same time; and I have every reason to believe that each one estimated his work for the two buildings at the same prices. That there was no vagueness in the plans or specification was evident from the fact that the only extra in either case was the churchyard gate. In each instance the whole of the tenders were within a small range of each other, and in every case the estimate for the larger church, with its arcade, aisle, and transept, was less than the other, which was built upon the simpler plan, in spite of the extra cost of pillars and arches. The actual cost of the one was about 4*l.* 5s. per person, and of the other 3*l.* 10s. Your own experience will have told you that the larger cubical contents will cost the more; and under similar circumstances the relative proportion between these will be very close. This practical illustration, however, may be none the less interesting and instructive for what it is worth, as a mere question of cost. The height of the main walls is as nearly as possible the same in both cases. The larger is more picturesque; and, to me, it has more character and suitableness for its purpose than the other; it is the one which I should prefer for my own use. Subordinate parts, moreover, afford not only additional play and feature, but seem to add size and importance to the main part, and allow much more scope for variety and play of design. The little chapel at New Quay, in Cornwall, of which also I give illustrations, was built to accommodate 180 persons, at a cost of about 680*l.*, which is slightly less in proportion than that at Smannel. Here, however, building was in some respects cheaper than in many parts of the country. I have since enlarged it to double the size, at about the same rate, by means of lengthening it, and the addition of a gabled aisle.

We will now look at another church which must come under the denomination of cheap, also in Hampshire, at Freemantle, near Southampton. This church is for 940 persons, and cost 2,860*l.*,—a fraction over 3*l.* per person. It is not a church which I should like to attempt to repeat for the same money, being a permanent structure of some pretensions; and although I have been told that I ought to be ashamed of mentioning the cost, I cannot say that I am ashamed of the building itself, which has since been provided with a belfry tower and spire, and subsequently enriched with carving. The church is built and finished with brick internally, and cased externally with Swanage stone. The stonework of the windows is thinner than I like to have it; but the introduction of moulded bricks for labels and strings is a piece of economy well repaid in respect of colour by the result. The difficulty which necessitated the greatest care in reducing the cost to a minimum, was that the whole scheme had come to a complete deadlock after eight or ten years of repeated endeavours to start it, and the successive abandonment of impracticable plans.

I suppose, at the present day, that churches built at the cost of less than 6d. per cubic foot may fairly come under the denomination of cheap churches. I exhibit drawings of what I have recently effected at Hanwell, at the cost of little more than 5¾d. It does not pretend to be a show church, but it is one of which no one need be ashamed, built, as it has been, to supply the urgent need of a poor and populous district. It is built of common stock bricks, with moulded arches, jambs, and other dressings of red brick; the only stonework used being for the pillars, caps and bases of arcades, and the tracery of windows. Here are no tiled passages, but one floor of wood block throughout. The upper parts of walls and spandrels between arches are plastered. Only chairs at present are provided, and somewhat meagre fittings. But the permanent portion of the fabric is thoroughly substantial, and all the requirements of the societies have been fulfilled. The interior area of this building is about 5,800 ft., and the accommodation, being nearly 10 ft. super. for each person, is for 600 persons, according to the plan, at a cost of just over 4,000*l.*,—of course, without the steeple.

An excellent church, by Mr. Cutts, in North Kensington, has been deservedly well spoken of as accommodating 750 persons, at a cost of 5,000*l.* This happens to be within a fraction of the same cost, proportionately, as the church at Hanwell. But I have just commenced a cheap mission church at St. Michael's, Wandsworth-road, Battersea, which, with an equal accommodation, comes to nearly 1,000*l.* less, when the cost of the crypt, suggested by the fall in the level of ground, is taken into account. The price per cubic foot is about the same, but it is an illustration of what may be done in respect of total cost by reducing the height, and consequently the cubic contents, and by economising the construction. The result remains yet to be seen. It will, however, in any case, fulfil the requirement for which it is erected. Here I have had recourse to wide aisles without a proper clearstory, but with wooden dormer windows in lieu of it. The tenders for this were all within 200*l.* of each other, so that the amount is fairly to be relied on.

None of these, however, touch the even yet more difficult question of cheap or temporary mission churches. For these we must look beyond and beneath the range of what we have been discussing.

In addition to considerations of form and proportion, we have to fall back still further upon substance and structure. A thin wall implies economy by a reduced amount of roofing to cover it, and a reduced total of cubical content.

I have spoken depreciatingly of iron. The iron church at Battersea-rise was reconstructed at Nightingale-lane. Its accommodation was for 400 persons. It cost originally 1,600*l.*, or 4*l.* per sitting. Its temporary removal on to another part of the same site during the building of the permanent church cost 500*l.* Its subsequent removal and re-erection in Nightingale-lane again cost 500*l.* That at St. Michael's, Wandsworth-common, accommodating about 130 persons, at the rate of 8 ft. super. for each, would have cost for removal on the same site about 130*l.*

I have found the cheapest and best material for such purposes to be wood-framing, covered inside and out with lath and plaster, and roofed with felt on boarding. It may be well, however, if it should be desired to give it a little more permanency, to cover with pantiles or slates on the roofs and upper parts of gables or walls, especially in exposed situations. The Mission Church of St. John's at Littlehampton is constructed in this manner. The first contract, for the accommodation of 210 persons according to the usual standard of church-building societies, though not, of course, in accordance with their requirements for a permanent building, was under 650*l.*, or little over 3*l.* each, again at the rate of 8 ft. per person. Slating and some stiffening of the timbers added 50*l.* to the cost. Additional room for nearly eighty persons, by an aisle on the south side, has now been provided for 200*l.*, or at the rate of 2*l.* 10s. each. The site is not freehold, and I detached the structure by laying the wood-sills on a strip of felt without any mortar-bed.

Here, again, I have adopted the principle of the clearstory, which is carried upon wooden posts, with low aisles. The roof was to have been covered with iron and a thin course of concrete. This was changed to slates. It is ceiled with deal boarding to follow the lines of back of principals, which are laminated, of three boards 1 in. thick, nailed and bolted. The roof is tied with iron rods and braces. The wooden supports, only 6 in. by 6 in. and 17 ft. high, were found to be insufficient to stand the rocking of the wind, and were strengthened with pieces bolted to them. The building depends for its effect, which is quite church-like, wholly upon the general proportion and form, and arrangements.

There is, as it were, no detail, in the ordinary sense of the term, and it has no pretension to be more than it really is, a cheap but thoroughly usable and ecclesiastical building. A class-room and various extraneous appliances have been added, which are not included in the statement of cost. In a somewhat similar building in Park-road, Brighton, but with external brick walls, I provided, as here, wooden posts and a wooden clearstory. A better and more permanent construction was desired, and the builder proposed cast-iron pillars and 9-in. arches for the arcades; I found, however, that at a considerable saving and at a vast improvement to the building, we were able to adopt stone caps and bases, 9-in. stone shafts, instead of iron, and an arcade of 14-in. work instead of 9-in. This building 80 × 40, affords accommodation for 400 persons, at a cost of about 2,000*l.*, or nearly 5*l.* per person at 8 ft. each. The chapel at Axford, near Hungerford, was a marvel of cheapness, and perhaps may be thought to tell against the principle which I have laid down. It is a plain parallelogram, accommodating at the rate of 7 ft. super. each person, or less than 3*l.* each person, 153 persons, for about 425*l.*, built of flint and brick, and covered with slates. It has a well-pitched roof, and the walls are 10 ft. high, with wooden windows. Now I had here to put into better shape without increase of cost a design already contracted for by a local builder from a local plan. Some increase of cost, however, was necessitated by a lengthening of the building, which, according to the first plan, was not large enough by about one-sixth to accommodate the number of persons for which it was supposed to be erected. In dealing with it, I had to raise the pitch of the roof considerably, and I lowered the walls by 2 ft., but had the building been proposed for 300 or 400, instead of 150, the treatment of it must have been very different, and very much more difficult to deal with, at the same rate of cost, in order to obtain anything like a fair proportion. My treatment did not in any respect add to the cost beyond the addition of the one-sixth part of increased area already referred to, which brought up the accommodation from 132 to 153, and the builder's tender from 363*l.* to 423*l.* 15s.

I have now endeavoured to show you not only what I think may be done, and ought to be done, but what has been done, with fairly satisfactory results, if one may believe the testimony of those most interested in their production and use. And I confess to no sense of shame in the part which I have taken in furthering the views and wishes of those whose requirements had to be met one way or the other.

I know as well as any one that our works are criticised for what they actually are, and not for what they might have been had more money been available. The critic, or the public who make use of the building, can know nothing of the circumstances, the difficulties, the impecuniosity of the promoters of many such schemes, and, therefore, cannot be expected to make any allowance whatever for them. Let our uncostly works, then, bear upon their face the evidences of their uncostliness; let them not be decked out in structural finery to which they are not entitled; and then let us comfort ourselves with the conviction that we have done better than our severest critics could have done under similar circumstances.

You may now be inclined to think that I have said and done far too much on behalf of cheap churches, but pray do not from this go away with the idea that we ought to be content with an inexpensive makeshift building, or that I am not myself as deeply alive as others can be to the benefits of better buildings where and when they may be had, or to the impression which they are calculated to produce of devotion in the worshipper, of instruction, edification, and pleasure in the spectator.

Do not even listen, for a moment, to the popular cry, "Why all this waste upon splendid and beautiful buildings, when so many are destitute of churches of any description, or even of healthy homes?"

Without the self-sacrifice of the rich, or without indulgence in ecclesiastical architecture, or in high art, for the benefit of others, or whatever else men may please to call it, nine-tenths of the amount which has been spent in impoverished districts would never have been spent at all. The greater need would never have been felt, and never supplied.

A cheap building is often, as it were, a necessary evil,—a mere substitute for something better, which may, and sometimes does, stand in the way of what might be of a higher and more permanent character. But it is in one sense a school of art. It teaches us the best, the most natural, the most simple modes of construction, and fits us for the better use of our higher opportunities. Let us not, then, despise small things, but let us rather aim at making small things great, by our care and diligent use of them, knowing this to be one important element in ultimate success.

ASHBURNHAM HOUSE.

From what we learn, at the time of the passing of the Public Schools Act, this "stately house," to quote Dean Stanley's words, "built by Inigo Jones, and illustrated by Sir J. Soane," is in some danger. For without their knowledge, in the first instance, and subsequently against their earnest remonstrances, it was, fifteen years ago, transferred prospectively from the Dean and Chapter of Westminster to the Governing Body of Westminster School. If this be true, the case is one that demands inquiry. Nothing should be done in haste, as it is admitted on all hands that the school is in a state of transition. Meanwhile, the Society of Antiquaries, the Royal Institute of British Architects, and the Society for the Preservation of Ancient Buildings, should consider as to the necessity for interference.

ST. STEPHEN'S, WALBROOK.

Of the City churches which have recently passed through the ordeal of "restoration," none perhaps have survived the process and suffered so little injury as has the Church of St. Stephen, Walbrook. Indeed, all interested in the preservation of the works of Sir Christopher Wren, must agree in congratulating Mr. T. Milbourn, the architect, on having demonstrated the possibility of carrying out requisite and important repairs without destroying, for the mere indulgence of individual taste or increasing the outlay, characteristic features,—as much the property of the future as they are of the present,—and which, once lost, can never be replaced. A contrast may well be made between what has been done at St. Stephen's and the work at St. Sepulchre's, on Holborn Viaduct. From my long association with the latter I may be allowed the comparison, and to express the regret, after what can be seen at St. Stephen's, that the advice tendered by so many architects and antiquaries was rejected by those in power. In the one case, as many hundreds of pounds as there were thousands in the other have sufficed to do all that was requisite. If the same counsels had prevailed in the latter case as have directed the work at Walbrook, a long, costly, and vexations litigation would have been avoided, and one of the most interesting of our City temples would not present, as it now does, a host of distasteful incongruities, but would have been preserved to the parishioners in the condition bequeathed by their ancestors.

In the course of his recent work, Mr. Milbourn had the opportunity of making an exhaustive search in the parochial records, and extracted therefrom a large amount of information relative to the church. He has kindly permitted me to extract from his note-book the following memoranda, which will be read with interest as matter hitherto unpublished, and as comprising an accurate account of the action taken with regard to the rebuilding of the church after the Great Fire of 1666.

The first meeting of the Vestry at this time appears to have been held at the "Cardenall's Capp, in Moorfields," on February 28th, 1666–7 (old style), but it seems that few steps, if any, were taken towards rebuilding until some years later.

In 1670, 22 Charles II., an Act of Parliament was passed for rebuilding the City of London, and uniting of parishes and rebuilding of the ecclesiastical edifices destroyed by the late fire, by which the parishes of St. Stephen Walbrook and St. Benet Sherehog were united into one parish, and by this Act it was also provided that the Church of St. Stephen should be the parish church of the two parishes so united.

Provision having been made to meet the expense of rebuilding the church, a vestry was held on December 4th, 1672, and the minutes record,—"There was y^{e} same time sent som of y^{e} Vestreymen to attend on y^{e} Court of Assistance of y^{e} Groc^{r}s Company then sitting at Grocers Hall, to begg their presence at y^{e} laying y^{e} first foundation-stones of y^{e} church," "the 17th inst. y^{e} sd Company being patrons of y^{e} sd church."

On the 17th December, 1672, the ceremonial of laying the foundation-stones took place, the stones being laid in the "east foundacon" in the following order:—The first stone was laid by Sir Robert Hanson, knight, Lord Mayor of the City of London; the second by Sir Thomas Chicheley, one of His Majesty's Privy Council; the third was laid by Sir John Robinson, Lieutenant of his Majesty's Tower; after which six members of the Court of Assistants of the Grocers' Company each laid a stone, the ceremony concluding with the Rector, Mr. Robert Marriott, the two churchwardens, and four parishioners also each laying a stone.

On the 4th of April, 1673, a vestry then sitting, "y^{e} right hon^{rbl} S^{r} Thom. Chitchley, whose Ancestors were the founders of" the "church, sent" "100^{li} toward y^{e} rebuilding y^{e} same."

At a vestry held on the 19th of the preceding February, it was "ordered D^{r} Christopher Wren, in consideration of his great care and extraordinary paines taken in y^{e} contriving y^{e} designe of y^{e} churche, and assisting in y^{e} rebuilding y^{e} same, be presente him or his Ladey 20 guinneys in a silke purse, and Mr. Woodrof, y^{e} Syrveyr, wth 5 guinneys, and y^{t} they both be invited and desired to dine wth y^{e} vestrey at y^{e} Swan, in Olde Fish-streete, y^{e} next vestrey day, w^{ch} is apoynted this day fourtnigh."

The five guineas voted to Mr. Woodroffe, the surveyor, appears, from the accounts, to have been expended in the purchase of a piece of plate.

On the 4th of June, in the same year, it was ordered that the ground whereon the minister's house stood before the fire, viz., on the right-hand side of Walbrook, should be let to one that would "erect on good house for a merchant."

At a vestry held the 31st of May, 1678, it was ordered that the church be forthwith pewed, "the moddell for the worke in scantlings and workmanship to be like St. Nicholas Coleabby." At a vestry held on the 11th of June following, it was agreed that Roger Dainer and Stephen Colledge should pew the church at the rates mentioned. An order was made by the Lord Mayor Edwards, dated July 10, 1679, that the works of the tower should be carried on. This order mentions that the church was begun in 1672, and that the parishioners advanced 3,000*l.* towards the building, but as the tower remained unfinished, the order was made. Upon removing the cement work from the west end of the wall of the north aisle, next to the vestry door, Mr. Milbourn discovered a portion of the wall of the old church, constructed of chalk rubble, also several pieces of Gothic moulding built in the upper portion, and evidently part of the edifice destroyed in 1666. The church formerly possessed a north entrance, opening into the Stocks Market. This he discovered blocked up with brickwork, now removed, and replaced with stonework to match the other portion of the north wall, the outline of the opening being preserved.

From a petition of the parishioners presented to Sir John Moore, knt., Lord Mayor of London, it appears that the steeple of the church by the first design was made fronting the High-street, or Stocks Market, for a public ornament, but afterwards it was ordered that a handsome and ornamental porch fronting the Market should be built instead. And in pursuance of this decision an order was then signed for the building by the Lord Mayor and the Lord Bishop of London, dated the 10th of July, 1679, whereupon Sir Christopher Wren made a drawing for the said porch, and is stated to have "often expressed his readiness to proceed therein if ground were assigned for the same," for obtaining which a petition was presented, but was opposed by the "ffarmers of the marketts"; the petition further sets forth that the said porch not being designed for any advantage to the inhabitants of the parish, but for a public ornament "to the said church and this Honourable City," and the petitioners having been at great cost in beautifying the church, "answerable to the said intended porch," do humbly conceive the ground of small benefit to the City, being at present employed for "slaughter-houses, stables, comon jakes, and such like vses, to the very great annoyance of all the neighbourhood and others resorting to the church," and pray that the matter be considered and settled.

This petition with reference to the proposed porch was referred to a committee of three Aldermen, with power to call before them the farmers of the markets, and to report to the court as to the same. This order was dated the 13th of December, 1681. The Aldermen reported to the Lord Mayor and Court of Aldermen the 18th of July, 1682, that they had viewed the ground of the market required by the parishioners, and that they were of opinion that a portico there would be very ornamental, and were informed that the cost would not exceed 300*l.*, and recommended the Lord Mayor to move the Lord Archbishop of Canterbury and the Lord Bishop of London that an order may be issued out to Sir Christopher Wren for building the same, if the parishioners would (as they had promised) set up a clock and a handsome dial thereon, and were further of opinion that the ground should be purchased out of the money appropriated for building churches. This report was dated 2nd May, 1682.

From some unexplained cause this was never carried out, and in consequence of the annoyance caused by the foul smells from the slaughter-houses located in the market, the north entrance was ordered to be closed.

The construction of the walls is somewhat curious, as may be observed upon the north side. About two-thirds of the height is random rubble work, in Kentish rag, the remainder being finished with ashlar facing of Bath stone, while the walls of the clearstory are of red brick and Bath stone dressings to the windows. It was thought desirable not to strip the cement from the walls of the clearstory, as the face of the brickwork was seen to have been much injured by the hacking out of the joints to form a key for the cement work. The walls of the building were evidently rendered in cement after the year 1813, for in that year a writer describes the north front to be divided by a string-course, and the oval windows to have Doric architraves and cherubim-head key-stones. On removing the cement these were seen to have been destroyed, but the string-course has now been restored.

It appears that in 1692 some misunderstanding existed between the Rector and his parishioners, for at a vestry held the 9th of December in that year it was agreed "by y^{e} parson and y^{e} parish" "that y^{e} bounds of y^{e} chancell w^{ch} belongs to y^{e} minister are all y^{e} upper part of y^{e} Church from y^{e} Cross Ile excepting y^{e} North and South Iles, w^{ch} two Iles doe belong to y^{e} parish all y^{e} length of y^{e} Church."

At a vestry held 10th April, 1776, the picture now hanging on the north wall, the gift of the then rector, Dr. Wilson, is first noticed, a report having been made to the Vestry that the painting would be delivered in a few weeks, upon which the large east window was ordered to be bricked up in order to fit the picture. This grand painting by West, with the gilt frame, appears to have cost 700 guineas, and is commonly called the Martyrdom or Stoning of St. Stephen, though in reality it represents the friends of the saint bearing his body away after he had received his death. It is open to criticism, the one great error being the large size of the figures, the artist having evidently studied the large size of his canvas more than the future position of the picture; but the defect would be in part obliterated could the picture be raised to a greater elevation.

There is one curious feature in the picture deserving of notice, viz., the modern purple ensign flying from the battlements of the gateway depicted in the background, but taken as a whole, the painting possesses great merit and is esteemed one of West's finest works.*

Dr. Wilson, the donor above mentioned, being extravagantly enraptured with the political opinions of Mrs. Catherine Macauley (widow), erected a marble statue on the east side of the church to that lady in her lifetime, but the same having been done without licence he was presented by the churchwardens at the Visitation held at Christ Church, the 20th of November, 1777, and was compelled to remove the monument upon an order from the Bishop. There are numerous monuments in the church, two of which are worthy of notice, viz., that on the right-hand column, opposite the Communion-table, to the memory of John Lilburne, the husband of Isabella Quiney, niece to Thomas Quiney, the husband of Shakspeare's daughter, Judith, the sculpture of which will repay a close inspection, and that of Dr. Croly, of revered memory, many years the rector of St. Stephen's.

The large east window, by Willement, was put in at the expense of the Grocers' Company in 1851, and the remainder of the windows (which were executed by Alexander Gibbs) were put in in 1862 at the expense of the parishioners as a memorial to their late rector, Dr. Croly. A writer of the present century, in speaking of this church, says:—"In criticising a building, as in examining an action, very different results will be arrived at if we view it firstly alone, that is, solely as regards itself; and then relatively, or in connexion with the circumstances attending its execution. Thus, St. Stephen's Walbrook, if looked at under the light of our present knowledge, and judged by existing canons of taste, might not obtain from some observers more than an ordinary degree of praise; whereas, if it be considered relatively with the state of art in England at the time of its execution, it may entitle its author to a large amount of credit, and serve to justify the extraordinary commendations which have been bestowed upon it by various writers."

There is no question that this church, next to St. Paul's, is Sir Christopher Wren's greatest work, and it is subject for congratulation that he should have left such a handsome monument to his memory in the parish of his nativity and residence. As will be seen on inspection, the plan of the church is an oblong or parallelogram, the effect of nave, aisles, transept, and chancel being produced by an arrangement of Corinthian columns, thus giving the building a cruciform appearance, and a lightness and elegance not to be surpassed. The columns being raised on pedestals the same height as the pews, brings them out in a proportion at once neither too slight nor too heavy. The panels of the dome and spandrels of the arches contain shields and foliage in the French style, as also the brackets on the walls of the north and south aisles; but had pilasters been fixed to the side walls similar to those introduced in the east or chancel end, it would have considerably improved the architectural appearance of the whole by relieving the walls of their present naked appearance.

The whole of the foliage and ornamentation of the panels of the dome have been executed with hair-mortar, evidently well modelled by hand to the required projection (in some cases at least 12 in. projection), and afterwards, before thoroughly dry, trimmed with a sharp instrument to the necessary pattern and outline. The enrichment of the entablature is very poor and badly executed, besides which the entablature is not properly proportioned.

The clearstory windows are also very poor and naked in appearance, and it is sincerely to be hoped that, with the large property the parish possesses, it will ere long fill these windows, as also those of the cupola, with stained glass. Some writers assign the construction of this dome as a kind of probationary trial previously to Wren erecting that of St. Paul's. There does not appear to be any foreign example of a building similarly constructed, therefore the design may be original. One writer ventures to assert "that Italy cannot produce a modern edifice equal to this in taste, proportion, and beauty." It is known that Wren visited France, but no record exists that he ever visited Italy.

Of the charges for work executed in fitting up the church, several interesting detail accounts remain, one of which informs us the joiner's work of the pulpit and top cost 75*l.* 5s.; the altar-piece, 54*l.* 10s.; the rails and banisters round Communion-table, 26*l.* 14s. 6d.; the Communion-table, 12*l.* 10s.; for taking down and altering the partitions, and making ready and fitting the reader's seat and clerk's seat, 6*l.* 15s. 6d.; for the pulpit-stairs, with a frame and door fitted under them, and 16 ft. of benching, &c., 5*l.* 10s. 6d.,—total, 181*l.* 5s. 6d.

The organ, which is very fine, is constructed of the remains of two old ones, with modern additions. It has been thoroughly cleaned and improved by Messrs. Hill & Son.

The length of the church within the walls is 82 ft. 6 in.; the width, 59 ft. 6 in.

The height of the side aisles, from the floor to the soffit of the ceiling, is 36 ft.; and the height to the top of the dome is 63 ft.

The work done has been truly a restoration, and not destruction, as is commonly the case.

The exterior work to the church and tower was entrusted to Mr. George Crabb, of Kingsland-green, at a cost of about 1,500*l.*

The interior works were done by Messrs. Colls & Sons, of Moorgate-street, at a cost of about 425*l.*, besides which the gas-fitting, upholstery, hot-water apparatus, picture, &c., cost a further sum of about 220*l.*

I conclude by suggesting to the parishioners that they might greatly improve the appearance of their church by removing the book establishment which now obscures the lower portion of the edifice. Viewed from a distance, the books and advertising boards at present appear as part and parcel of the building.

John E. Price, F.S.A.

At Barrow-in-Furness house property is in demand. In this centre of the hematite iron trade blocks of houses have lately been put up containing 600 tenements, yet the requirements of the population are far from met. At the next census probably no town will have shown more progress in the last ten years than Barrow. By that time it will probably contain some 50,000 souls. Of these, the bread-winners are occupied not merely in the smelting of hematite ore, under the company of which his grace of Devonshire is the head, but also in rolling the product into steel rails and plates, in the building of ships, and in the construction of machinery. A new high-level bridge will soon connect the centre of the town with Old Barrow Island, and the Furness Railway Company are about to proceed with the construction of what is known as the Park Loop Line, and the erection of a new central station.—*Land.*

---

* This picture has been thoroughly cleaned by Mr. S. Coombes, of the Strand.

EDINBURGH.

THE building trade in this city has for some time been in an abnormal condition. The number of Property Investment Companies (Limited) which have recently started into existence, in the endeavour to outrival each other, have been propping up men of straw, and giving advances upon insufficient security. But some of the most prominent of these are now in liquidation, and speculation in house-building has consequently received a decided check.

Visitors to Edinburgh are familiar with the modern castellated group on the Calton-hill forming the County Prison. The central block, which was designed by one of the Brothers Adam, has been condemned by Government as not possessing the amount of cubic space required by statute for each prisoner, and a new building is to be erected in its stead under the supervision of the Board of Works. A promise has been given that the elevations will be submitted to the local authorities.

We entertained the hope that a new public library would have been added to the attractions of the city, but the result of a poll, obtained by the issue of voting-papers, has been adverse. The cry of additional taxation was made the most of by many who are the first to laud the public spirit of individuals who, of their own accord, carry out such undertakings, but who are the last to do anything of themselves in the same direction. Edinburgh stands in a most favourable position for adopting the Public Libraries Act, seeing that the library belonging to the Faculty of Advocates is, like the British Museum, entitled to a copy of every work published. There is a sufficient space of ground belonging to the Faculty, adjoining the present library, than which no better site for a public library could be found, and it was understood that the Faculty were ready to meet the Town Council in the most liberal spirit. Private benevolence may yet do what public spirit was unwilling to undertake, and the boon will doubtless be received with universal plaudits.

The convenience of the public as regards transit is receiving marked attention. The tramway company propose acquiring power to extend their lines further to the south, south-west, and west, and to form a cross line from the crossing of Bridge-street and High-street, up the latter, thence by George IV. Bridge and Lauriston to Toll-cross. The North British Railway Company are making preparations for the formation of a suburban line along the southern outskirts of the city, commencing near Dalry at the west, sweeping round the suburbs of Merchiston, Morningside, Grange and Newington, and onward past Duddingston to Portobello. This line will not only be of advantage as regards passenger traffic, but will greatly relieve the central station from the goods traffic which now passes through the heart of the city and occasionally causes most inconvenient blocks.

A list has been published of the subscriptions towards the sum of 11,000*l.* required to provide a new church for the congregation which occupies the nave of St. Giles's Cathedral. A moiety of that sum has been subscribed and the remainder is probably forthcoming although the movement is somewhat languid.

The new University buildings continue to make satisfactory progress, and as the work advances the character of the design becomes more manifest as a creation in which utility and art are admirably combined, the outward form being manifestly the outcome of the internal requirements, superfluous features nowhere appearing. At the present rate of progress the principal elevation towards Teviot-row will be ready for the roof in a few months.

The Melville Drive, through the Meadows, is, at its eastern termination, being deviated to the northwards so as to debouch upon the line of Hope Park-terrace. The eastern boundary wall has been removed and an ornamental railing upon a moulded stone coping is being substituted, and decorated pillars, surmounted by a lion and unicorn respectively, flank the entrance. These are the gift of the Messrs. Nelson, publishers, in recognition of the circumstance that when their premises, adjoining, were, a few years ago, consumed by fire, they were allowed by the city authorities to erect a temporary wooden erection on the Meadows in which to store the salvage. The new premises of the Messrs. Nelson have been erected on a site in proximity to the Queen's Park, and a central tower, in the line of Preston-street, forms a marked feature in that direction.

ELECTRIC LIGHTING IN ROOMS.

LIVERPOOL ENGINEERING SOCIETY.

AT the usual meeting, held on the 2nd of March,—the president, Mr. Alfred Holt, being in the chair,—a paper on "The Application of the Electric Light at the Free Public Library, Liverpool," by Mr. John S. Brodie, was read in the author's absence by the hon. secretary, Mr. Allies. The author premised his remarks by stating that, though many and varied applications of the light for out-door purposes had been made, it was reserved for London and Liverpool to promote its introduction for the purpose of illuminating large rooms,—the former at the reading-room of the British Museum, the latter in the new large reading-room called after Mr. Councillor Picton. The considerations which led to the adoption of the light were first the serious loss and damage sustained to the costly and handsome bindings of the large collection of valuable works caused by the injurious fumes given off by gas, and secondly the extreme difficulty found in ventilating the old reading-room when crowded of a winter's evening, owing to the effluvium arising from the number of people and from the large quantity of gas required to effectively illuminate the room. The last and chief consideration, pointing as it does, to the injurious effect of gas on the human constitution, cannot be too highly estimated. It may be stated that, after the electric light had been temporarily in use for some time, when gas was used instead for a few weeks during the substitution of permanent machinery for working the light, the library officials were overwhelmed with complaints on account of not only bad light but bad ventilation. The details of the engine power required to generate the electric current and of the light itself, which is of the description known as the Serrin's patent lamp or regulator, were then stated, and one of the lamps was exhibited and explained by Mr. Clare, the curator in charge of the machinery at the library. In conclusion, the author stated that, although the question of economy was not considered in the matter, yet on comparing the cost of the electric light with that of gas used in the same room, the former came out more favourably, in spite of being saddled with the first cost and working expenses of machinery for ten lamps, three being all that at present had been used.

Mr. R. R. Bevis, jun., then gave a description of the "Brockie" lamp now in use at the workshops of Messrs. Laird Bros., at Birkenhead. Discussion on this interesting subject was deferred to the next meeting.

ARCHÆOLOGY AT CAMBRIDGE.

The University Collection.—The Syndicate appointed December 11th, 1879, "to consider first, whether any rooms can be provided temporarily for the immediate reception of objects" of archæological interest; "and secondly, what permanent provision can be made for the preparation, arrangement, and display of such collection, and to report to the Senate before the end of the Easter Term, 1880;" and, further, (Grace, March 11th, 1880), "authorised to consider and report to the Senate upon an application from Professor Mayor on behalf of the Philological Society," reported to the Senate that they were unable to find any suitable rooms disengaged, or any house which can be acquired for the purpose. This report was not published to the Senate at the time owing to an oversight. The Syndicate now report that they have obtained leave from the Museums and Lecture-rooms Syndicate to use, for a space not exceeding two years from January 1, 1881, the gallery of the large room in the central block of the Museum; and the collections belonging to the Antiquarian Society have been deposited there. As, however, the period for which this gallery has been lent is not a long one, and the space is already almost filled by the collections, they feel themselves obliged to suggest the erection of some permanent building, which might be used, in the first instance at least, for the reception of the archæological collections. Before, however, proposing any definite scheme or site, they think it desirable that they should be allowed to take professional advice. They therefore beg leave to recommend that they be allowed to consult an architect, on the understanding that the University should neither be pledged to adopt his design nor incur any further liability.

The Antiquarian Society.—The *Cambridge Chronicle*, from whose columns we quote the foregoing paragraph, also contains a report of the proceedings of the Antiquarian Society at the meeting held on the 28th ult., when Professor Hughes exhibited and described some felstone implements which he had recently found in a cave in the valley of the Elwy, North Wales. After a short review of what is known of the ancient tribes of North Wales, in which he suggested that the men of Ardudwy might be the Ordovices, and pointed out the district which local names assign to Gwyddelod, he gave a sketch of the various kinds of hill forts which occur on the borders of North Wales. These, he said, fell into two groups,—A, stone works; B, earth-works. A. There was no masonry, in the proper sense of the word, in any of the hill forts referred to; that is to say, there was no mortar or cement of any kind, nor any walling of stones dressed so as to fit together. But there was in some cases (1) a rude wall formed by building up rough stones. These walls have generally been demolished either on purpose or by the accidents of time, so that they present the appearance of long continuous lines of rough stones heaped up as if thrown by hand to get the stones out of the way. But sometimes the loose stones of the upper part have preserved some of the rude walling near the base, and it is seen to vary according to the forms into which the rock used naturally breaks. (2.) A still more common kind of stone rampart was formed by placing two rows of slabs on edge about 4 ft. to 6 ft. apart, and filling the interval with rubble of smaller stones. B. The earthworks consisted of one or more lines of fosse and vallum, always conforming to the shape of the ground, and ceasing where a precipice or other natural defence rendered them unnecessary. Sometimes there was a combination of the second class of stoneworks with the earthworks. Mr. Lewis (on behalf of Mr. Naylor, who was unavoidably absent) exhibited a chalice, which he had lately purchased in Norwich; it had belonged to the parish of Rockland, in that neighbourhood (the church had long been in ruins), and bears the legend

SENT·TANDROVS·OF·ROCKLAND·

It was considered to be of foreign manufacture, probably sixteenth century. The curious form TANDROVS (for Andrew) was illustrated by such words as *tawdry*, *Tibbs*, and *Tooley*, which are derived from *St. Etheldreda*, *St. Ebbs*, and *St. Olave* respectively. By the kind permission of the vicar and churchwardens of the parish of St. Andrew the Great, in Cambridge, their similar, but much more highly ornamented chalice was also exhibited; it bears the legend

THIS·FOR·SENT·TANDROS·PARES·
KAMBREGE.

On the top of the cover is the date—1569. A paper, by Mr. C. W. King, upon the Roman method of striking medallions, was communicated by Mr. Lewis, and ordered to be printed.

SURVEYORSHIP ITEMS.

Bognor.—At the meeting of the Bognor Local Board, on the 3rd inst., before the business on the agenda was proceeded with, the chairman referred, in terms of regret, to the death of Mr. J. G. Booker, the late Surveyor to the Board, and it was resolved that the clerk be instructed to forward a vote of condolence with the widow.

Newark.—The Newark Highway Board have caused their district surveyor (Mr. William Hitchin) to be apprehended on a charge of forgery. Mr. Hitchin has been surveyor to the Board for the last ten years.

Wallasey.—At a special meeting of the Wallasey Local Board on the 1st inst., it was announced that the surveyor, Mr. Lea, had tendered his resignation, which was accepted, and it was agreed that his salary be paid to him up to the end of the current month. It was further decided that a surveyor be advertised for at a salary of 300*l.* a year; also that Mr. Lea should continue his services until the appointment of a successor, and to be paid at the rate of 400*l.* per annum. The board also resolved to put in operation the 53rd section of the Wallasey Improvement Act, and, in consideration of Mr. Lea's long services, to make him an allowance of 200*l.* per annum for two years, on condition that he gave assistance to his successor as required.

ARCHITECTURAL SOCIETIES.

Edinburgh Architectural Association.—At a meeting of this Association on the 2nd inst., Mr. M'Lauchlan, president, in the chair, Dr. R. M. Ferguson delivered a lecture on "Acoustics." The lecturer first discussed the difficulties with which the architect had to contend in selecting forms and materials for the proper management of sound. One of the most important facts, he said, was that several reflecting surfaces or transmitting media acted at the same time, and the ear was unable to estimate the separate effect produced by each. All could not be silenced to estimate the action of one only. He discussed, in the course of the lecture, some of the fundamental principles of the science of sound bearing on walls and windows, and concluded by showing, with the aid of the lime-light, the reflection and interference of the surface waves of water in pools shaped so as to represent the ground-plan or vertical section of well-known public halls.

Oxford Architectural and Historical Society.—On Saturday, February 26th, this Society paid a visit to Merton College and St. Alban Hall. The members were received at Merton College by the Rev. Noel Freeling. Mr. Bruton gave an account of the architectural features of the College. The earliest buildings would seem to have been erected in 1270, and of this work portions remain in the base of the tower, which was not, however, completed till 1451. The date assigned to the chancel was about 1300, not 1277, in which year a high altar is recorded to have been consecrated, but this probably stood under the tower-arch. The painted roof, the work of Mr. Polley, a Fellow of the College, and the altar-piece, assigned by tradition to Tintoretto, as well as the early brass and fine brasses were pointed out to the Society. The founder, Walter de Merton, obtained from Reading Abbey the advowson of the parish church of St. John, which he rebuilt, providing at the same time accommodation for his scholars. This accounts for the present combination of parish church and college chapel. A private chapel, in which week-day services were held, formerly existed on the site of the kitchen. It was remarked as a curious fact that the accident which determined the form of Merton Chapel had given a plan for the erection of other chapels, such as those of Magdalen, All Souls', and New Colleges. The library was built in 1350, but Mr. Bruton stated his opinion that it was erected as a dormitory, being on too large a scale for a library of that date. This theory was supported by the absence of all evidence of this building being used as a library till more than a century after its completion. The Society afterwards went over St. Alban Hall.

THE SANITARY MOVEMENT.

Bristol.—Mr. Henry Masters, architect, read a paper on the 3rd inst. in the Library of the Museum, Queen's-road, on "Sanitary Science as applied to Our Dwellings." He urged upon his hearers the importance of every householder making himself familiar with the position of his house-drains, and also the general principles upon which the sanitary arrangements were constructed, but he cautioned them not to be their own sanitarians, but rather to be advised by those who had made the matter their study, as the science of sanitation was very complicated, and required a long practical knowledge by those who professed the science. He also contrasted the ready-made houses of our day with those erected by our forefathers; and he stated that, although he had tested a large number of houses in Bristol and Clifton, he found but a small proportion fit to live in from a sanitary point of view.

Manchester.—Another of the series of health lectures for the people, which are being given under the auspices of the Manchester and Salford Sanitary Association, was delivered on the 4th inst., in the large hall of the Religious Institute, Corporation-street, Manchester. The chair was taken by Dr. Henry Browne, president of the association. The lecturer was Dr. Simpson, of the Manchester Royal Infirmary, and the title of his lecture, "The House: its Structure, Heating, Ventilation, &c." The lecturer dealt with his subject very fully, setting out with the broad principle that every house, from the palace of the nobleman to the cottage of the artisan and labourer, ought to be dry, warm, and well ventilated. But, he said, the proportion of dwellings which fulfilled those simple but very important requirements to the whole mass of houses was very small indeed. Even those houses which were supplied with what were called "all modern appliances" were often little better than nurseries for disease; and in the same way even the simplest dwellings might fulfil the requirements of health and comfort.

THE COPYHOLD COMMISSION.

The thirty-ninth report of the Copyhold Commissioners to her Majesty's principal Secretary of State for the Home Department has been issued as a Parliamentary paper. It is as follows:—

> "We have now completed 14,147 enfranchisements and commutations, of which 402 enfranchisements have been effected during the past year. The particulars of these are 17 enfranchisements in clerical manors, 20 in collegiate manors, and 365 in lay manors. Besides these enfranchisements we have received 160 applications, of which 17 are under the voluntary and 143 under the compulsory powers of the Acts. We have also to report that, under the powers given to us by Section 35 of the Copyhold Act, 1852, we have suspended the proceedings in a proposed compulsory enfranchisement by a tenant of the manor of Prittlewell Priory, in the county of Essex, under the following circumstances:—The land comprises about an acre fronting the sea, and abutting on the public promenade at Southend. The tenant was admitted to it—'upon trust, nevertheless, to keep the said piece or parcel of land enclosed, and to form a promenade thereof for the recreation of the inhabitants and visitors of Southend,' 'and upon condition that, in case the said piece or parcel of land shall be built upon, or shall be planted with trees or shrubs which shall at any time be higher than 4 ft., then it shall be lawful for the lord of this manor to seize and to assume the said piece or parcel of land into his hands as forfeited.' The enfranchisement, if effected, would release the land from this trust and condition, which release would be injurious to the property of the lord and other copyholders of the manor, as well as to the public interest, and would, in our opinion, produce such an especial hardship as is provided for by the section above mentioned. We have further to report that, in pursuance of the powers invested in us by 'The Universities College and Estates Act, 1853,' the 'Universities and College Estates Act Extension, 1860,' and the 'Universities and College Estates Amendment Act, 1880,' we have authorised 1,165 sales, 426 purchases, 75 enfranchisements, 72 exchanges, 17 transfers of trust, 29 applications for the augmentation of benefices, 205 applications for raising money, and 9 cases of application of purchase money under the Amendment Act of 1880. Of these, 32 sales, 16 purchases, 1 exchange, 1 transfer of trust, 7 applications for the augmentation of benefices, 9 applications for raising money, and 9 cases of application of purchase-money under the Amendment Act of 1830, have been authorised during the past year."

The commissioners signing the report are Messrs. James Caird and G. A. Leach, and Lord Lyttelton.

VENTILATION AND WARMING.

As one who has taken much interest in the matter of ventilation and warming for some years, and has practically tried to carry out various plans in several houses he has lived in, I may, perhaps, venture to say a few words on this much-discussed question.

With regard to ventilating, I think the following facts prove conclusively that the exits ought to be at the top of a room. The room I am now sitting in is 12 ft. by 14 ft. and 11 ft. 6 in. A good fire is burning in it, and a gas-light consuming 5·6 cubic feet per hour. A Boyle's chimney ventilator opens into the chimney, and from 150 cubic feet to 180 cubic feet of air pass through the opening of the grate per minute, besides what passes through the ventilator. The latter amount I am not at all certain about, but I do not think it is less than 20 cubic feet per minute. These estimates are based on measurements made with an anemometer by Casella. The room is perfectly fresh and pleasant. Before the ventilator was put into the chimney close under the cornice, and when 250 to 300 cubic feet of air was passing through the fireplace per minute, the room became unpleasantly close when two persons were staying in it for any length of time during the day, unless the window was opened at the top, which of course disturbed the air in the upper part of the room and brought more or less of it down to the fire. When the gas was lighted it became unbearably close. Now, here is a room containing 1,900 cubic feet of air, and that amount passing through it every seven or eight minutes, and yet it becomes close, especially when the gas is lighted. As soon as ventilation is established by an exit into the chimney at the top of the room the closeness ceases, and even with five people in the room and the gas alight it no longer becomes close.

With regard to warming, my experience only relates to steam and hot-water applied centrally and also in rooms. That experience leads me to the conclusion that, with ample ventilation, fresh air may be conducted over steam or hot-water radiators without losing its freshness. In one house I lived in for three years, I fitted up steam-pipes and radiators throughout, and Arnott's ventilators in every room but one leading direct into the chimney, close to the ceiling. In one room the chimney could not be found. Fresh air was admitted from the front of the house through a lumber-room, and up through the hall-floor, in which a radiator was sunk. Steam-pipes and radiator were fixed underneath each window, so that as cold air came down, partly coming in at the joints, and partly the air of the room cooled by contact with the glass, it was met by an ascending current of hot air, and consequently all cold draughts along the floor were entirely prevented.

The ventilators allowed an escape of from 20 to 50 cubic feet per minute, according to the difference of temperature inside and outside the house, and also dependent on the height of a chimney into which they entered. All grate-registers were closed except in the one room unprovided with a ventilator. No fires were used in the house except in the kitchen, the steam-boiler, and occasionally in the drawing-room, which was rather large, and not sufficiently provided with radiators for an external temperature of less than 5° below freezing. Except in summer, the windows of that house were scarcely ever opened except for cleaning. The rooms, except the one without a ventilator, never became close, even with 30 ft. of gas burning per hour, and nine to twelve people in a room. Even those who were most prejudiced had to admit this. I do not put forward this system of chimney-ventilation as the best, but it is one available in houses already built, and one involving little expense. It has one great drawback; it is least efficient when most wanted. When the temperature outside approaches that inside the house, the ventilating power diminishes very much. We can, of course, under such circumstances open the windows top and bottom. It is a system which worked well in Edinburgh, where the outer temperature was always low both summer and winter.

The steam-boiler was self-feeding by means of a ball valve. The valve was placed in a tube 1 ft. below the boiler, so as to be always cold, and was made of india-rubber. It was in constant use day and night for full eight months in two successive years, and at the end of that time was as good as new, apparently. The fire was small and shallow, 8 in. by 8 in. by 5 in. deep, and a conical hopper forming part of the boiler placed over it to contain a reserve of coal. The fire was regulated by the pressure in the boiler working the damper when it exceeded 3 lb. per square inch. It was attended to by the cook, who, after a little instruction, had no more trouble with it.

For facility of regulation and rapid adaptation to the constant changes of our climate, I greatly prefer steam or a combination of steam and hot water to hot water alone; but it is hardly admissible in any house where there is no one with some knowledge of how to set matters right in case of a tap sticking fast, or some similar accident.

It may, I think, be a matter of some importance in preventing the burnt feel in heated air to cause *all* the air to be heated to pass over the heaters, and not a portion only, as is often the case. A small portion highly heated does not readily mix with the rest, and may have an opportunity of offending the nose before it is mixed.

I would add a caution as to the use of ventilators opening into chimneys.

1. Never put one into a chimney apt to smoke without first curing that tendency, or it will be aggravated.

2. Never put one into a sitting-room or any room required to be warm, without providing some means besides a common open fire to warm the room. From neglecting to attend to this, we hear so often in regard to these exit as well as inlet ventilators from the open air, "Oh! what a draught!" All the warm air goes to the top of the room, and is removed by the ventilator. The air in the room is consequently so cold that any movement of the air is felt as a cold draught. Warm air must be provided from the hall, or a stove so made as to admit hot air, or some other way, otherwise the ventilator will soon be closed to stop "that draught."

A. Gray.

A POSITION FOR SMALL-POX HOSPITALS.

SIR,—1. Select a good site.

2. Erect the buildings on columns and girders 50 ft. to 100 ft. above ground-level, with necessary lifts, &c.

3. The ground-area to be made a convalescent garden for patients previously to leaving.

4. Further details if desired.

PHILIP B. LEE.

VENTILATION, CHIMNEY-DRAUGHT, AND SMOKY CHIMNEYS.

SIR,—I have read the letter of your correspondent, Mr. R. H. Ridout, F.C.S., with great amazement, and shall very shortly dispose of his statements.

He describes me as having stated that "there are no means of measuring the passage of combustion gases through a chimney." I said nothing of the kind. What I did say was that "we have no air-meter or anemometer, as it is called, by which we can as readily ascertain all about chimney-draught as we can about temperature by the use of a thermometer." It is true we may buy an anemometer for 4*l.* 4*s.*, but I never knew of any one buying it and making experiments with it in the case of household chimneys. The expense and trouble none care to incur. The probability that as much as 60,000 cubic feet of air per hour often pass up a lofty chimney with a good fire burning is shown in the Board of Health Report on the Warming and Ventilation of Dwellings, issued in 1857, placed before Parliament, and signed by Wm. Fairbairn, F.R.S., James Glaisher, F.R.S., and Charles Wheatstone, F.R.S. As regards chimney-draught causing a reduction of pressure in an apartment and the result being *closeness*, I alluded, of course, to chimney-draught when a fire is burning. To what else are we to attribute draughts round doors and windows when no wind is blowing, and a feeling of languor with no apparent cause of oppression, so that it becomes a relief to open a door or a window? The reduction of pressure cannot go on to a great extent undoubtedly, because when a certain limit is passed, chimney-draught ceases, and we have the escape into the room of offensive products. I was last week in the basement of a lofty house, built within five years. A new slow combustion grate was in use in some servant's room, and the smell of carbonic oxide was distinctly perceptible.

As regards the reduction of pressure in an hermetically sealed chamber, this has no more to do with the subject than the pressure of air at the bottom of a well. What we really have to do with is the reduction of pressure in a room where a fire is burning, where air passes away but does not enter with sufficient freedom, so that the results are closeness, draughts, ascent of air from basement, descent of air in short chimneys, sluggish currents, descents of foul air, &c., as before pointed out.

As regards chimney-draught not occasioning closeness, and a comparison of such closeness with the experience of mountain-climbers, why, I have been on the very point of drawing a comparison in my previous letters between the experience of mountain-climbers (from Auldjo and his predecessors downwards) and the experience of myself and others in rooms which are, to some extent, deprived of air, and where we labour to breathe.

As regards gaining my facts from my "inner conscience," if this means careful observation and using my brains, I am not humiliated by it. I know that I move air when I move my eyebrows, though I possess no scientific instrument that can prove it to me. Do I know this through my "inner conscience"?

I hope the next time Mr. Ridout honours me with his notice, he will carefully consider my letters, will not misquote me, and will think twice and thrice before he charges me with making statements calculated to mislead.

FREDK. EDWARDS, Jun.

THE FROST AND BOILER EXPLOSIONS.

SIR,—Will you again allow me a little space in your valuable columns, in answer to your correspondent, Mr. James France Hill, who says in your last issue that "the various writers on this subject whose emanations he has read" have still something to learn. I hope he does not mean to convey the idea that the firm to which he alludes are the *only* people possessing the secret of making a perfectly automatic and reliable hot-water apparatus on the cylinder or so-called Yankee system. I would just like to learn from Mr. Hill by what means a cylinder system with one pipe is made automatic, as I am free to confess that in my present state of benighted ignorance I cannot even imagine how this is accomplished. Can he not rise to the dignity of a benefactor of his species, and divulge the all-important means by which this system is to be rendered "at once the most safe and reliable known'?

JOHN SMEATON.

DISTRICT SURVEYORS' FEES IN THE CITY.

SIR,—Permit me to offer an explanation in reference to certain remarks made by Alderman Sir Andrew Lusk, M.P., at the Mansion-house Justice Room upon the occasion of the withdrawal of a summons against Messrs. Trollope & Sons, and reported in your issue of the 5th inst.

The Alderman expressed surprise that I should have received fees in respect of works not within my district, and that I failed to attend the court to give evidence upon the summonses served upon me as a witness.

The facts of the case are shortly as follows:—Last April, Messrs. Trollope gave notice of certain works in Nicholas-lane they intended erecting; on receipt of which I referred to the district map, and found the proposed works were clearly within my district. The buildings were surveyed during construction, and in November were completed, the account was rendered, and paid by Messrs. Trollope. Subsequently, Mr. Collins claimed the fees, and much correspondence ensued. In the result he took out a summons against Messrs. Trollope for neglecting to give him, as District Surveyor, the legal notice, this summons being heard on the 23rd ult. when the ward beadle of the adjoining ward of Langbourne proved that the main portion of the buildings were within that ward. This evidence I accepted as against that of my map, and paid Mr. Collins his proportion of the fees.

In regard to the summonses and my alleged non-attendance to give evidence, allow me to remark that the first summons only came into my hands on the afternoon of the day the summons was returnable, and too late to enable me to give evidence. I attended the Court on the second occasion, and met Mr. Collins, who expressed his willingness to settle the case. Together we proceeded to Mr. Wontner's office, where we met Mr. Trollope, and then to my office, where I paid Mr. Collins his proportion of the fees, upon the understanding that the summons against Messrs. Trollope was to be withdrawn, and my attendance as a witness dispensed with.

I regret having to trouble you with this letter, and must trust entirely to your sense of fairness to insure its insertion. On two occasions I have attended (with Mr. Morten, my counsel) the court to make this explanation, but both Sir R. W. Carden and Sir Andrew Lusk, while expressing sympathy, could hardly see their way to making the court a vehicle for a personal explanation.

EDWARD POWER,
District Surveyor of the Southern Division of the City of London.

COMPETITION COMMITTEES.

SIR,—I do not advise the competitors for the West Derby cemetery chapels to press their request to be allowed to substantiate the correctness of their estimates by submitting bonâ fide tenders from respectable builders.

My plans were selected, and the first premium awarded, in the late competition for new markets at Burton-on-Trent, and to prove that the building could be erected for the stipulated amount, I obtained and forwarded a "bonâ fide tender from a respectable builder," and with it a copy of the bill of quantities; but the town council and the professional referee do not consider this "sufficient or satisfactory proof," and, up to the present, they decline to inform me why.

In addition to this, they sanction an additional expenditure on the designs now adopted, in order to embody in them one of the principal features in my plans.

A. ED. DEMPSTER.

CAUTION.

SIR,—Architects should beware of a fluent impostor who is "cadging" in the provinces,—he was in Surrey last week. He sends up his "card" (but is not a man of one name), and asks for employment, dwells on his acquaintance with Mr. Waterhouse and others, hints about starvation, exhibits a little sketch he has to prepare, and requests a loan, to be repaid on the word of a professional man. R.

"COVERING THE ROYAL EXCHANGE."

SIR,—The late Sir J. Paxton, some years ago, proposed a glass roof, and I remember preparing drawings for the same, but what became of them I cannot say. I think it was then noticed in the *Builder*. L.

A NORWEGIAN TIMBER CONTRACT.

BENNETT *v.* J. A. KJELLBERIJAN SOVER.

THIS was an action (heard in the Sheriff's Court, Red Lion-square, before Mr. Under-Sheriff Burchell and a common jury) to recover damages for breach of contract for the non-delivery to the plaintiffs, Messrs. Bennett & Co., by the defendant, of a large quantity of Norwegian timber. Mr. Wheeler was counsel for the plaintiffs, and the defendant, who resides at Gothenburg, Norway, and Sweden, was not represented in court.

Counsel explained to the jury that the plaintiffs resided at Grimsby, Lincolnshire, and contracted with the defendant to send them a quantity of timber of a certain description. The quality sent was not as the defendant had undertaken, and Messrs. Bennett had sustained a loss, for which they brought an action to recover damages.

Mr. Joseph Bennett, one of the firm, was called, and described the nature of the timber sent, and pointed out the description of the article contracted for, and the defects in the quality of the timber supplied.

Mr. Under-Sheriff Burchell thought the case was proved. The defendant had admitted the breach by not pleading.

Mr. Taylor said he was a wood-broker at Grimsby, and had examined the timber. The loss claimed was not excessive. He described the character of the goods.

Mr. Wheeler said the damages would be 456*l.* 6*s.*

Mr. Under-Sheriff Burchell told the jury that the plaintiffs were clearly entitled to the loss they had sustained by the breach of contract to supply certain timber, and they (the jury) would give a verdict for the amount as mentioned by the learned counsel.

Verdict accordingly.

St. Paul's Ecclesiological Society.—At a meeting of this society, held on the 3rd inst., Major Alfred Heales, F.S.A. (hon. treasurer), in the chair, a paper, entitled "Suggestions for the Fabric of the Church in the Present Day," was read by Mr. Edmund B. Ferrey, who dealt with his subject under the heads of ground-plan, general structure and arrangements, and materials of which the fabric is composed, with a few words on fittings. In the discussion that ensued, Mr. G. H. Birch disagreed with Mr. Ferrey in his advocacy of brick, especially for London churches. It was unattractive and gathered dirt, and when used for internal surfaces absorbed light. Mr. Somers Clarke, jun., and Mr. Hugh Stannus having spoken, Mr. Ferrey replied, and said that he would not advise the use of red bricks, but of stocks, as the former undeniably absorbed light.

Books.

Cottage Hospitals: General, Fever, and Convalescent. Their Progress, Management, and Work. Plans and Illustrations. By HENRY C. BURDETT. Second Edition. Re-written and enlarged. London: J. & A. Churchill, New Burlington-street. 1880.

WE ought to have mentioned before now the publication of a greatly enlarged and much improved edition of Mr. Burdett's account of Cottage Hospitals. It has been almost entirely re-written, and many illustrations and plans, to which Mr. Ernest Turner has specially contributed, have been added. Detailed descriptions of many of the best managed hospitals will be found, and statistics as to the relative mortality and healthiness of large and small hospitals. The author does us no more than justice when he acknowledges the part the *Builder* played in fostering the movement. From the time of the formation of the first Cottage Hospital by Mr. Napper, now some twenty years ago, we long continued regularly to chronicle each fresh addition to the list, and sought, by suggestion and otherwise, to lead to their improvement. The conviction we early expressed as to the value of the movement has been amply justified, and is now universally admitted. It is to be hoped that Mr. Burdett's new edition will be largely circulated.

Miscellanea.

Melbourne Exhibition.—The Exhibition Supplement of the *Melbourne Argus*, Jan. 6th, gives a full account of the display made by "Mr. George Jennings, sanitary engineer, of Stangate, London, and the South-Western Pottery Works, at Poole, in Dorsetshire, one of the largest works of its kind in England, established many years ago for the manufacture of the Jennings' patent drain-pipes, now used in all works of importance, and of the same manufacture as have been supplied to the city of Adelaide, where a drainage scheme is in progress. Some excellent samples of pipes are shown at the stand near the centre of the court. The improvement consists in the jointing and method of laying, which permits the opening of a line of pipes for inspection and examination without breaking or interrupting in any way the continuity of the drain. A junction can also be introduced to finished lines of pipes without dislocation. Among many appliances to be seen are gully-traps of all kinds for streets, yards, stables, areas, sinks, &c.; pumps, with inspection covers to valve chambers; hydrants, sluice-valves, stand-pipes, water posts, urinals for streets, public thoroughfares, and private dwellings, all constructed with a view to cleanliness and economy of water; "tip-up" lavatories, and water-closets upon a new principle, dispensing with the trap beneath, which was so liable to stoppage. A model bath-room, designed to occupy a small compass, is shown. One of the latest inventions is a sewer gas-trap for waste-pipes of baths, lavatories, &c., which prevents the intrusion of foul air into houses. A "combined sink and wash-tub" is shown, which can be converted into either the one or the other, and in place of a grating, which so often becomes stopped, there is a slot the whole width of the sink, which allows waste water to run freely into the drain, but prevents the escape of small articles." The firm is well represented by Mr. George Jennings, jun.

Fire-proof Floors.—The Nottingham *Journal* says, on Sunday morning, a man named Wm. Long was passing down Leen-side and observed that the premises of Messrs. Lewis Brothers were on fire. He communicated the fact at Leen-side Police Station, and the officer in charge telephoned to the central station. On the brigade arriving they found that the fire was confined to a hay-loft over the stables in which were four horses. Through the exertions of William Woodward, who was at work with a hose kept on the premises, the brigade got a good supply of water from a hydrant on Leen-side, and were not long in extinguishing the fire. The utility of fire-proof floors was shown to very great advantage in the fire, for there is no doubt whatever had it not been a gypsum cement concrete floor (Dennett's patent) in the room where the fire occurred, the entire stock and machinery of Messrs. Lewis Brothers, including the valuable horses, would have been destroyed.

Wages in America.—Accounts come from Cincinnati and New York, says the *American Architect,* of threatened strikes among workmen for an advance in wages. The New York carpenters will demand the large increase of fifty cents per day after April 1, and the fresco-painters' union has already given notice of an advance in rates from 3½ to 4 dollars per day. In Cincinnati, the printers' union, the stove-moulders, the masons and carpenters, and the furniture makers, have given notice that higher pay will be required. We are glad to see that the building trades generally have had the good sense to warn their employers of the rise, which is ordered for April 1st, in time to enable them to make their contracts intelligently. . . . . The foreigners in Cincinnati think the time is favourable for agitation in favour of an eight-hour law, but we have faith enough in American energy to believe that the demand for time to spend in idleness will never become very general here. . . . . The "Carpenters' and Joiners' Protective and Benevolent Association" of Chicago, following the example of other cities, has issued a circular, under date of February 4. After speaking of the rise in rents and in the prices of the necessaries of life with the revival of business, the circular says that the carpenters and joiners of that city have never been justly paid for their work in comparison with members of other trades, and that it seems to the members a duty to themselves and to their families to stand up for their rights and ask an equal share in the prosperity of the day; "always," however, "opposing the baneful maxim of strikes." They therefore announce that they have agreed from and after April 1, 1881, not to work for less than three dollars per day, nine hours to constitute a days' work on Saturday, and ten hours on all other days.

Prudhoe District Water Supply.—Capt. R. C. Hildyard, late R.E., an Inspector of the Local Government Board, held an inquiry on the 2nd inst. at Prudhoe, about midway between Hexham and Newcastle-upon-Tyne, with respect to an application by the Hexham Rural Sanitary Authority for a provisional order to enable that body to carry out the Minsteracres scheme of water supply. Great scarcity of water was stated to exist in the four townships affected, Dr. Maclagan, the medical officer of health, connecting this with the numerous outbreaks of typhoid and scarlatina which had occurred since 1874. Mr. J. S. Hodgson, C.E., engineer to the scheme, explained that he proposed to supply a population of 500 with twenty gallons per head per day by partially impounding two streams at Minsteracres in a storage-reservoir of 8,000,000 gallons capacity. The drainage area was 280 acres in extent. The total estimated cost of the scheme, including land purchase, engineering, and contingencies, was 11,216*l.* An analysis by Mr. Pattinson, of Newcastle, showed the water to be of excellent quality. A counter-scheme, prepared by Mr. F. Rich, a Newcastle architect, was submitted on behalf of the Duke of Northumberland and others, who opposed the Authority's scheme. Mr. Rich proposed to obtain a supply of fifteen gallons per head per day from a nearer source, comprising springs and drainage area on the local coal-formation. The scheme is estimated to cost 7,130*l.* In cross-examination of the witnesses supporting it, special attention was directed to the risk attaching to the permanence of supplies obtained from the coal formation. The Inspector closed the inquiry after promising to go over the ground at an early date, in company with the engineers and others interested.

A New Reflector—The mission of Mr. Chappuis appears to be to give light a good direction, and send it into the dark corners. His last patent has been taken with the view of improving the light in picture and other artistic galleries, and is called "The Polygonal." It is a combination of two reflecting surfaces fixed on separate frames, and joined in another outer frame, with mechanism so contrived as to enable a person to readily adjust the two reflecting surfaces at different angles, thereby reflecting the light forward generally in the gallery, or sending the reflected light to recesses on the right or on the left of the gallery, as may be desired.

The Ordnance Survey.—In the House of Commons, on the 3rd inst., Mr. Shaw-Lefevre informed Mr. Newdigate that the Ordnance Survey of Warwickshire will not be commenced till 1885. He would inquire whether counties, like towns, could have their surveys accelerated by contributing to the expense.

David Cox's Signboard at Bettws-y-Coed.—The case *ex parte* Baroness D'Eresby *re* Thomas was before the Court of Appeal last week. It was the appeal of the Baroness Willoughby D'Eresby from the order of Sir James Bacon, Chief Judge of the Court of Bankruptcy, who had reversed the decision of the judge of the Bangor County Court, and had decided against the claim of the baroness to the signboard of the "Royal Oak," at Bettws-y-Coed, painted by David Cox. Mr. Romer stated that the signboard in question had been used as the signboard of the inn in question as far back as 1841. It was hung up outside for some years, and was afterwards framed and glazed, and hung up in the hall of the inn, where it had remained up to the date of the failure. The evidence went to show that the signboard was always handed over to the next tenant, and was, in fact, treated all through as a landlord's fixture. He submitted that the Chief Judge, in treating the picture as he had done, as being a chattel in the possession of the tenant, and as such passed to the trustees, was not justified by the evidence. He contended that this was a fixture within the meaning of the Act, and as such passed with the freehold to the landlord. After further arguments their lordships allowed the appeal, with costs, Lord Justice James observing that in no conceivable view of the case was this a chattel in the hands of the trustee by right of any ownership on the part of Miss Thomas. She never had a right to claim the picture as against Lady D'Eresby, and the trustee could only claim it as being in the order and disposition of the bankrupt at the time of the bankruptcy, with the consent of the true owner; but it never belonged to Miss Thomas, but belonged to Lady Willoughby D'Eresby in her own right as a thing affixed to the freehold.

Skew Arches.—At a meeting of the Royal Scottish Society of Arts on the 28th ult., Mr. Henry Cadell, president, in the chair, the secretary (Mr. Edward Sang) read a paper in which he pointed out "a common but vital error in the construction of skewed arches," and described what he submitted to be the indispensable principle upon which such arches should be constructed, explaining, however, in the course of his paper, that though he had directed attention to the importance of this principle half a century ago, he was not aware that a single skewed arch had been built in Britain embodying it. During the discussion which followed on the paper, one of the speakers (according to the *Scotsman*) took occasion to remark that Mr. Sang had spoken as if engineers who had to do with skewed arches were a set of fools. Mr. Sang replied that that was exactly what he meant, to which the speaker responded that Mr. Sang must surely have been unfortunate in his engineering acquaintances. The same speaker remarked that the erection of bridges according to the principle advocated by Mr. Sang would cost three times the amount of those built according to the ordinary practice. Mr. Sang, however, disputed this; and the proceedings closed with a vote of thanks to him for his paper.

Tenders for City Works.—The Commissioners of Sewers for the City of London on Tuesday last, the 8th inst., opened tenders which had been received for masons' and paviors' works for the term of three years from Lady-day next. They were as follows:—Masons' work—Mr. G. G. Rutty, at the scheduled prices; Messrs. E. & H. Beevers, south district, 10 per cent. below; north district, 5 per cent. below west district, 5 per cent. below; east district; 10 per cent. below; Messrs. Mowlem & Co.,, 15 per cent. below; Messrs. Aspinall & Son, 3½ per cent. below; Mr. J. J. Griffiths, 7½ per cent. below; Messrs. Turner & Sons, 5 per cent. below. Paviors' work—Mr. G. G. Rutty, at the scheduled prices; Messrs. Mowlem & Co., 12½ per cent. below; Mr. J. J. Griffiths, 5 per cent. below; Messrs. Aspinall & Son, 2½ per cent. below; Messrs. E. & H. Beevers, east district, 10 per cent. below; west district, 5 per cent. below; south district, 10 per cent. below; north district, 5 per cent. below; Messrs. Turner & Sons, 5 per cent. below. The tenders of Messrs. Mowlem & Co., being the lowest in both cases, were accepted.

Rubens as an Architect.—The last four numbers of *L'Art* have included a communication, still unfinished, on Rubens, "Architecte et Décorateur," and his Influence on the Art of the Low Countries, 1622 to 1735. It includes numerous illustrations, and should particularly interest many of our readers.

The Ventilation of Underground Railways.—The question of ventilating the underground railways has been under discussion before a Select Committee of the House of Commons. The District Railway Company seeks powers in an omnibus Bill to construct ventilators along the entire route of their underground lines into the public streets where necessary, similar to those which exist in Euston-road. The proposal of the railway company was strenuously opposed by the Corporation of the City, the Metropolitan Board of Works, the Commissioners of Sewers, the proprietor of the Royal Hotel, Blackfriars, the Westminster Board of Works, the Vestry of St. George's, Hanover-square, and the authorities of the Inner Temple. After a considerable amount of discussion, the Committee decided that the Company should have power to make the ventilators, with the sanction of the Metropolitan Board of Works, or upon appeal to an arbitrator appointed by the Board of Trade, and they should also be allowed to make a ventilator within 100 yards of the Temple-gardens; but in that case the Temple authorities should be consulted, and any difference should also be referred to arbitration.

Artists' General Benevolent Institution. Sir John Gilbert, R.A., took the chair at the annual general meeting of this Institution, held at the Rooms of the Arundel Society, 24, Old Bond-street, on the 28th ult. Those present included Messrs. H. H. Armstead, R.A., James Murray, W. W. Fenn, Edward Dalziel, J. H. S. Mann, P. C. Hardwick, J. Vokins, H. Graves, J. C. Millais, J. Clayton, E. W. Waterlow, W. W. Ouless, J. Farquharson, Haynes Williams, K. Haleswelle, and the secretary, Mr. F. Lambe Price. The sixty-sixth annual report, for the year ending December 31st, 1880, showed the receipts to have been 7,564*l.* 8s. 3d., and the payments (including 1,450*l.* invested) 5,851*l.* 19s. 3d., leaving a balance at the banker's of 1,712*l.* 9s. Grants have been made to 145 applicants, ranging in amount from 10*l.* to 80*l.*; 500*l.* of the expenditure consisted of a grant to the Artists' Orphan Fund, "for the education of children lately under charge of a benefactor to the charity." The annual report and cash account were adopted, on the motion of Mr. R. Clayton, seconded by Mr. Edward Dalziel. Sir Frederick Leighton, President R.A., was re-elected president of the Institution. Mr. H. T. Wells, R.A., was elected vice-president, in place of Mr. Alfred Elmore, R.A., deceased.

Assessment of King's College.—Amongst the cases which have been before the Court of General Assessment, Westminster, this week, was that of "King's College *v.* the Assessment Committee of the Strand Union." The appellants are the occupiers of King's College, within the respondents' Union, and for which they were assessed at 4,284*l.* gross and 3,856*l.* rateable. The appellants claimed to have these amounts reduced to 1,980*l.* gross and 1,650*l.* rateable. Dr. Barry, Principal of King's College, was examined on the part of the appellants, and said that three-fourths of the entire receipts were swallowed up by the salaries to the professors and teachers. Their usual practice was to devote three-fourths of the entire receipts to them, and one-fourth to the officers and general expenses of the buildings. The income was about 32,000*l.* a year. After a consultation between the counsel on both sides, it was agreed to reduce the gross value of the assessment to 3,000*l.* and rateable value to 2,500*l.*, each side to pay their own costs.

Arbitration Case at Bristol.—Mr. Pownall, the arbitrator in the case between the Corporation of Bristol and the London and South-Western Bank as to the value of the ground given up to the city by the Bank on the side of Corn-street and the side of Small-street,—by which both thoroughfares have been considerably widened,—has given his award, viz., the sum of 9,639*l.* to be paid by the Corporation to the Bank. This is less than the claim advanced by the Bank. The London and South-Western Bank originally paid for the site of St. Werburgh, upon which they built, 18 000*l.*

Slag Bricks.—The Cleveland slag bricks, manufactured by Messrs. Wilson, Pease, & Co., of Middlesbrough, have been used in London for external walls for the last four years, and in Middlesbrough for nine years. They have been tested, we hear, during the recent severe weather by immersing them in water during the day, and putting them out of doors during the night, and the bricks tried are still as sound as they were before the experiment.

Halstead, Kent.—Owing to the very dilapidated state into which the old church here had fallen, it was pulled down some months since, and the little edifice of St. Margaret's now stands erected on the grounds of the cemetery, almost in the centre of the parish, and opposite Halstead Place, the residence of Mr. T. F. Burnaby-Atkins. Built in the style of the thirteenth century, it has a chancel which was formerly used for holding the burial service in, nave, aisle, south porch, vestry, and organ-chamber, and seats for the accommodation of about 350 persons. Mr. W. M. Teulon was the architect, and Mr. Williams, London, the contractor, and the carving was done by Mr. J. M. Griffin, London. The church was consecrated on the 23rd ult.

Poor-rates and Pauperism in the City.—The *City Press* states that the money raised in the City yearly, in the shape of poor-rates, amounts to about 180,000*l.* It need scarcely be said that pauperism in the City does not cost that amount. About 80,000*l.* is the City's contribution to the common poor fund, in addition to which the citizens have to contribute largely to the Asylums Board, and in other ways to assist the poor "beyond the boundaries." Within those boundaries, however, the out-door and indoor paupers average about 4,500.

The Tay Bridge.—A meeting of the North British Railway directors was held on the 3rd inst., at which it was finally resolved to proceed with the Tay Bridge Bill. The chairman said that they would endeavour to get the height of the bridge lowered, because although a stable enough bridge could be built at the proposed height, one at a lower altitude would inspire greater confidence in the public. The state of the traffic since the bridge fell showed the necessity for its reconstruction.

The Llanberis Slate Quarrymen.—In compliance with the request of Mr. Assheton Smith, the workmen employed at the Dinorwic slate quarries, Llanberis, have reconsidered their refusal to contract themselves out of the Employers' Liability Act, and will not avail themselves of it, preferring to remain under the old system, by which Mr. Assheton Smith continues his support to the quarry hospital, pensions to widows, and other privileges.

Horton-in-Ribblesdale.—A large three-light stained-glass east window in the style of the York Minster glass has just been erected in this church to the memory of the late Mr. John William Foster. The subjects are respectively the Nativity, the Crucifixion, and the Ascension. In the first an angel bears the legend, "Gloria in altissimis Deo." The artists are Messrs. Powell Brothers, of Leeds.

Prizes for House Sanitation.—The Society of Arts have just issued forms, which are to be filled in by persons, owners, lessees, or occupiers of houses desirous of competing, and must be sent, with plans, &c., to the Secretary of the Society, on or before May 12th, 1881. The plans must consist of a ground plan and sections to the scale of not less than 1 in. to 5 ft.; details not less than 1 in. to the foot.

A Course of Five Lectures on Architecture has recently been delivered at the School of Military Engineering at Chatham, by Mr. E. Ingress Bell, and will be printed, with photo-zincographic illustrations, at the Royal Engineer Institute. The lectures were illustrated by drawings, many of which were kindly lent to Mr. Bell for the purpose by Mr. Phené Spiers, and some by Mr. Alfred Waterhouse, A.R.A.

Church-work in New Zealand.—One of the largest orders for church furniture ever given out from New Zealand has just been shipped, we are told, by the well-known firm of Jones & Willis, of London and Birmingham. It was entrusted to them by the architect, Mr. B. W. Mountford, and is for Christ Church Cathedral. It comprises nearly every requisite for the fittings of a church.

Filters for the Soldiers.—Messrs. Atkins & Co., of Fleet-street, have just completed a second order for 4,000 pocket-filters for the Cape. The filters are of the same pattern as those sent out on previous occasions to Ashantee, Abyssinia, and other parts of Africa by the same firm. We are told that the whole of the 4,000 filters were delivered within a week from the date of order.

A Rowland Hill Memorial.—The executive committees have decided that the statue of Sir Rowland Hill shall be unveiled in Kidderminster on the first or second week in May.

TENDERS

For the erection of stabling for the London General Omnibus Company, at Cathcart-street, Kentish-town. Mr. A. Tosh, architect. Quantities by Mr. Bolton:—

Drake Bros	£3,750	0	0
Frost & Co.	3,725	0	0
Steed Bros	3,500	0	0
Ashwell	3,469	0	0
Lucas & Son	3,266	0	0
Higgs	3,098	0	0
Coulter	3,079	0	0
Crackett	3,069	0	0
Richards	2,979	0	0
Niblett	2,959	0	0
Parker	2,881	0	0
Hammond	2,800	0	0
Ward & Lamble	2,797	0	0
Judd	2,777	0	0
Garrud	2,751	0	0
Beale	2,718	0	0
Richeirs & Mount (accepted)	2,660	10	0

For the erection of stables, warehouse, and dwelling-house, Back-street, Bristol, for Mr. Jephtha Feltham. Mr. Cloutman, architect. Quantities by the architect:—

Gorvett	£1,190	0	0
James	1,170	0	0
Wilkins & Sons	1,150	0	0
Eastabrook & Sons	1,115	0	0
Davis	1,115	0	0
Humphries	1,111	0	0
E. & T. Hatherly	1,094	0	0
Pitt	1,080	0	0
Beaven & Brown	1,077	0	0
Cowlin & Sons	1,075	0	0
Davey	1,074	15	0
Dubin	1,058	0	0
Hill	1,056	0	0
Veals	1,044	0	0
Church	1,043	0	0
Parrott	1,035	0	0
Hodges	1,030	0	0
Hayes	1,025	0	0
S. Cowlin	1,020	0	0
Banner	1,010	0	0
Tucker	979	10	0
T. Beaven	920	0	0
Sharp & Graham	838	4	6
Crick (received too late)	994	0	0

For the erection of new Masonic Hall, club-house, &c., for the Weston-super-Mare Masonic Hall Company, Lim. Messrs. Price & Wooler, architects:—

Church, Bristol	£2,634	0	0
Palmer, Weston-super-mare	2,410	0	0
Beavan, Bristol	2,390	0	0
Sharpe, Bristol	2,363	0	0
Pocock, Weston-super-Mare	2,325	0	0
Lewis, Weston-super-Mare	2,143	0	0
Stradling & Sons, Weston-super-Mare	2,100	0	0
Taylor-Harvey, Weston-super-Mare	1,955	0	0
Gregory, Weston-super-Mare	1,650	16	0

For proposed residential chambers, Oxford Mansions, on the site of the old Oxford Market, Oxford-street, W. Mr. A. E. Hughes, architect. Quantities by Messrs. Sandell & Corderoy:—

	A.	B.	C.
Perkins	£20,853	£540	£19,150
Simpson	20,385	500	18,725
Williams & Sons	20,170	550	18,390
Higgs & Hill	19,994	198	18,654
Manley	18,995	215	17,327
Ansell	18,360	320	16,890
Hall, Bedall, & Co.	18,120	300	16,651
Longmire & Burge	17,790	435	16,322
Braid & Co.	17,507	200	15,850
Holland & Hannen	17,390	211	15,951
McLachlan & Sons	17,380	354	16,080
Downs	16,372	388	14,947

For the erection of a church and schoolroom, Upper Richmond-road, Putney, for the trustees. Mr. W. G. Loe, architect. Quantities by Mr. J. G. Marsh:—

	Amount of Contract.	Credit by Old Materials.
Bullen	£3,208	£60
Williams	2,557	125
H. Loe	2,520	100
Amended Tenders.		
H. Loe	2,144	100
Williams (accepted)	2,145	125

For the erection of new coal stores and retort-house, at West Ham Gasworks, Stratford. Mr. Edward H. Thorman, engineer. Quantities by Messrs. Franklin & Andrews:—

Lawrence	£8,250	0	0
Bangs	8,078	0	0
Cox	8,073	0	0
Wood Bros	7,863	0	0
Fish	7,847	0	0
Ashby	7,500	0	0
Perry & Co. (accepted)	7,226	0	0

For construction of and fixing iron roof to retort-house at West Ham Gasworks, as above:—

Fraser Bros.	£975	0	0
Thames Ironworks Co.	960	0	0
Howard	896	0	0
Cutler	888	0	0
Appleby Bros.	875	0	0
Horseley Iron Co (accepted)	825	0	0

For main drainage works, Cork District Lunatic Asylum. Mr. Wm. H. Hill, architect:—

E. & P. O'Flynn (accepted)	£769	0	0

For boundary-walls, stable-gates, front fencing, Downs-road, Epsom. Mr. J. Hatchard Smith, architect:—

Jeal (accepted)	£245	0	0

For house, Worple-road, Epsom, for Mr. J. J. Caney. Mr. J. Hatchard Smith, architect:—

Pyke (accepted)	£1,140	0	0

For alterations to offices for the Newport Dock Company, Newport, Mon. Mr. E. A. Lansdowne, architect:—

Linton	£233	0	0
Miles	194	0	0
Francis	160	0	0

For premises (exclusive of the doors and finishings, and chimney-pieces of the 1, 2, 3, and 4 pair floors, and shop fronts), King's-road and West-street, Brighton. Messrs. Lainson & Son, architects. Quantities supplied by Messrs. Fowler & Hugman:—

Colls & Sons	£12,900	0	0
Cheeseman & Co.	12,569	0	0
Crockett	12,392	0	0
Kirk & Randall	11,343	0	0
Jones & Co.	10,840	0	0
Barnes (accepted)	10,344	0	0

For the erection of the Three Choppers, coffee tavern, Stratford, E., for Mr. Andrew Johnstone, J.P. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Hosking	£1,212	0	0
Morter	1,198	0	0
Reed	1,183	0	0
Norton & Son	1,175	0	0
North Bros	1,125	0	0
Hearle & Son	993	0	0

For furniture and fittings to the Abbey-lane Schools, West Ham-lane, E., for the West Ham School Board. Mr. J. T. Newman, architect:—

Furniture.			
Hammer	£565	0	0
Wake & Dean	468	0	0
Blinds.			
Robinson	50	15	0
Yarrow & Son	48	12	0

For the erection of six houses in Rowan-road, Hammersmith, for Mr. G. Wells. Mr. G. Saunders, architect:—

Hunt	£3,785	0	0
Lucas & Son	3,420	0	0
Braithwaite	3,190	0	0
Chamberlain	3,150	0	0
Brunsden (accepted)	2,700	0	0

For the erection of High School for girls, King-street West, Hammersmith. Mr. G. Saunders, architect:—

Adams & Son	£2,347	0	0
Braithwaite	2,150	0	0
Chamberlain	2,099	0	0
Hunt	2,075	0	0
Brunsden	1,968	0	0
Lucas & Son	1,839	0	0

For alterations and additions at the Viaduct Inn, Hanwell, for Messrs. Fuller, Smith, & Turner. Mr. W. Nunn, architect:—

Brunsden	£649	0	0
Lamble	623	0	0
Wescombe	608	0	0
Hunt	595	10	0
Nye	573	0	0

For the restoration, &c., of the Town-hall at Rhyl. Mr. Baker, architect:—

J. P. Williams	£910	0	0
Hammond	853	0	0
Edwards	775	14	0
Joseph Williams	553	4	0

For drainage works, Budleigh Salterton. Mr. Charles W. Whitaker, engineer:—

Reynolds, Exeter	£2,683	0	0 !
Coldridge, Exeter	2,158	0	0
Crokam, Starcross	1,830	0	0
Gibson, Exeter	1,814	0	0
Burch, Budleigh Salterton	1,725	0	0
Shaddock, Saltash	1,474	0	0 !

For alterations, &c., at the Princess Alice public-house, Forest-gate. Mr. Wesley, architect:—

Page	£860	0	0
Shurmur	725	0	0
Johnson	720	0	0
Taylor & Parfitt	709	0	0
Walker	695	0	0
Palmer	665	0	0
Beale	648	0	0

For new vicarage-house (exclusive of the sums allowed for the old vicarage-house), at Redlynch, near Salisbury, Wilts. Mr. Fred. Bath, architect. Quantities supplied:—

Lever, Son, & Hooper, Ansty	£1,896	12	6
Crook, Dean	1,821	0	0
Grace, Wallop	1,770	10	0
Young & Sons, Salisbury	1,600	0	0
Scruse, Salisbury	1,576	0	0
White, Handley	1,545	7	6
Wort, Salisbury	1,510	0	0
Mitchell & Bailey, Woodfalls	1,446	16	2
Cooper, Stoford*	1,330	0	0

* Accepted, subject to a slight reduction.

For fencing, &c., on the estate of the Earl of Yarborough, at Great Grimsby. Messrs. Maughan & Cuxson, surveyors:—

Simons, accepted.

For rebuilding the Half-Moon, Gracechurch-street, for Mr. J. T. Porter. Messrs. Taylor & Locke, architects. Quantities by Mr. William Birdseye:—

Kirk & Randall	£12,657	0	0
Gill	11,963	0	0
Bangs & Co.	11,820	0	0
Merritt & Ashby	11,713	0	0
Brass	11,685	0	0
Ashby & Horner	11,590	0	0
Conder	11,510	0	0
Bryce	11,440	0	0
Morter	11,089	0	0

For alterations, &c., to Nos. 26, 27, and 28, Fleet-street, for Messrs. Clowes. Mr. James Joy, architect:—

King	£1,372	0	0
Macey & Son	1,070	0	0
Cook	1,030	0	0

For the erection of a shop adjoining the District Railway Station, West Kensington, for Mr. G. H. Lubbock. Mr. William F. Welten, architect:—

W. & J. Thorne	£175	0	0
Stone, West Kensington	172	0	0
Potten	161	0	0

For new offices for the Newport Harbour Commissioners, Newport, Mon, Mr. E. A. Lansdowne, architect :—

	In Free-stone.		In Forest Stone.
Stephens & Bastow, Bristol	£1,799	......	£1,929
Eastabrook & Sons, Bristol	1,772	......	1,924
Firbank, Newport	1,772	......	1,924
Burgoyne, Blaenavon	1,750	......	1,800
Hatherley, Bristol	1,694	......	1,831
G. Thomas	1,689	......	—
R. S. Thomas, Newport	1,650	......	1,720
Moulton & Brownscombe, Newport	1,635	......	1,745
Jones & Son, Newport	1,587	......	1,835
Wilkins, Newport	1,550	......	1,740
Miles, Newport	1,494	......	—
Francis, Newport	1,479	......	1,519
Linton, Newport	1,455	......	1,645
Richards, Newport	1,439	......	1,599
Blackburne, Newport	1,433	......	1,655
Martin, Newport	1,413	......	1,573
Orphan, Newport	1,391	......	1,541
Williams, Newport	1,310	......	1,380

For lodges and entrance-gates to the Abbey Park, Leicester, for the Corporation. Mr. J. Tait, architect :—

	Lodges.				Entrance-gates, &c.		
Cox	£1,369	0	0	......	£416	3	6
Hayes	1,367	0	0	......	364	9	0
Bass	1,270	0	0	......	167	13	0
Stirk	1,260	8	6	......	365	15	0
Jewsbury	1,214	0	0	......	319	0	0
H. Hewitt	1,210	0	0	......	347	0	0
Elliott	1,198	17	0	......	335	0	0
Major	1,167	17	0	......	310	0	0
Hutchinson	1,163	0	0	......	359	0	0
G. Hewitt	1,139	0	0	......	325	0	0
Kellett (accepted)	1,113	10	0	......	303	10	0

For erecting chapel, lodge, and laying-out cemetery, at Grays Thurrock. Mr. E. C. Allam, architect :—

Botterill	£2,889	0	0
Staines & Son	1,844	0	0
Beale	1,837	0	0
Philbey	1,768	17	11
Pavitt	1,748	0	0
Judd	1,629	0	0
Thorogood	1,581	19	6
Wood	1,499	0	0
Thompson & Son (accepted)	1,439	10	0
Anderson	1,298	0	0
Blanchard	1,260	0	0

For the erection of a villa residence at Snakes-lane, Woodford, for Mr. W. Kemsley. Mr. E. C. Allam, architect :—

Wells (accepted)	£1,340	0	0

For new bridge between Grundisburgh and Burgh, Suffolk. Mr. H. M. Eyton, architect :—

Saunders & Son, Dedham	£248	0	0
Gladwell, Ipswich	239	7	6
Graystone, Ipswich	234	10	0
Coe, Ipswich	225	0	0
Pollard, Ipswich	223	0	0
Smith, Ipswich	218	7	0
Gibbons, Ipswich	215	0	0
Fosdike & Son, Woodbridge (accepted)	211	5	0

For interior of house, for Mr. Hart, Redwall-road, Lower Clapton. Mr. John Butters, architect :—

Potter (accepted)	£250	0	0

For works for Westminster Fire Office, 49, Whitcombe-street :—

Cock	£595	0	0
Howard & Son	581	0	0
Clemence	544	0	0

For additions and alterations at Forest Gate School. Mr. W. A. Longmore, architect. Quantities by Messrs. Goodchild :—

Coulter	£6,145	0	0
Barton	5,436	10	2
G. J. Wood	5,300	0	0
Jones & Co.	5,170	0	0
H. F. J. Wood	4,994	0	0
Ward & Lamble	4,932	0	0
Little	4,820	0	0
Hunt	4,759	0	0
Nightingale	4,741	0	0
Cass & Beldon	4,720	0	0
Harris & Co.	4,696	0	0
Judd	4,679	0	0
Gregor	4,639	0	0
Hearle	4,569	0	0
Gentry	4,540	0	0
Bentley (accepted)	4,450	0	0

For construction of waterworks for supply of village and district of Rostrevor, Co. Down, comprising storage reservoir, regulating tanks, and supplying and laying of iron pipes. Mr. William James Watson, architect. Quantities supplied :—

Simpson, Dublin	£3,933	3	9
Carlisle, Belfast	3,446	7	0
Daniels & Co., Dublin	3,082	0	0
Collen Brothers, Portadown	3,050	0	0
McAleanan, Castlewellan	3,027	0	0
Mahood & McMurray, Newry	2,974	10	0
Wheelan, Newry	2,753	0	0
Mooney & Co., Dublin (accepted)	2,734	0	0

For internal fittings and partitions, &c., to Nos. 22, 24, 26, 30, and 44, Bank Buildings, Hackney. Messrs. W. Waymouth & Son, architects. No competition.

Shurmur (accepted).

For additions and stables to Sutton Lodge, Hackney. Mr. John Hamilton, architect.

Shurmur (accepted).

For sundry repairs to houses in Ferdinand-street, Kentish-town, for Mr. A. H. J. Castell.

Ward & Lamble (accepted).

For the erection of Wesleyan church and school-house, Youghal, county Cork. Mr. Wm. H. Hill, architect :—

Leahy	£1,450	0	0
Long	1,450	0	0
E. Fitzgerald & Son	1,430	0	0
Roberts	1,375	0	0
Edward Fitzgerald	1,350	0	0
Keller (accepted)	1,265	0	0

For alterations and additions to Burgh House, Hampstead, for Mr. G. Rooth. Mr. J. T. Newman, architect :—

Reed	£697	0	0
Berry	684	0	0

TO CORRESPONDENTS.

G. C. (it is out of power to look back for cases. We have half a dozen such requests every week).—W. S. (amounts and other names should in all cases be sent).—A. B. C. (must adopt the usual course to make his wants known).—B. P. (ditto).—A. M.—S. D.—V. H.—J. P.—C. M.—H. S.—R.—J. C.—R. B. & Son.—F. A. F.—J. T.—J. & W.—B. H. T.—J. S. H.—J. T.—P. G. S.—R. W.—W. H. H.—D. B—H. B. & B.—P. B. L.—J. W. & Sons.—R. P.—D. W.—W. G. L.—B.—F. S.—A. R. D.—S. R. L.—R. H. T.—C. W. W.—H. W.—S. T. H.—T. B.—S. H.—R. C.—R. L. C.—J. P. V.—Mr. B.—W. J. W.—C. W. C.—J. W.—E. W.—W. L.—S. H.—W. M. T.—R., P., & Co. (illegible).—K. T. (No).—F. C. H. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS TRADE, AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under	4s. 6d.
Each additional line (about ten words)	0s. 6d.

Terms for series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.

FOUR Lines (about THIRTY words) or under	2s. 6d.
Each additional line (about ten words)	0s. 6d.

REPLIES TO ADVERTISEMENTS,
Addressed Box ——, Office of "The Builder,"
Cannot be forwarded, but *must* in all cases be *called for*, and the office Receipt produced.

THE CHARGE FOR A BOX IS AS UNDER :—

For "Situations Wanted" Advertisements	3d. per Week.
For all other Advertisements	6d. per Week.

PREPAYMENT IS ABSOLUTELY NECESSARY.

⁂ Stamps *must not* be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable the Post-office, King-street, Covent-garden, W.C. to

DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied *direct* from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, prepaid. Remittances payable as above.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
Corsham, Wilts.—[Advt.]

Bath Stone.
SUMMER DRIED,
STOKE GROUND, and
CORSHAM DOWN,
Supplied in any quantities on the shortest notice.
PICTOR & SONS, Box, Wilts. [Advt.]

Doulting Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doulting Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset. — Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W.—[Advt.

Doulting Stone and Ham Hill Stone, of best quality. Prices and Estimates, including delivery to any Station, on application to
STAPLE & HANN, Quarrymen, Stoke-sub-Hamden, Ilminster. Agent, E. CRICKMAY, No. 4, Agar-street, London, W.C. [Advt.

Asphalte.
Seyssel, Patent Metallic Lava, and
White Asphaltes.
M. STODART & CO.
Office :
No. 90, Cannon-street, E.C. [Advt.]

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [Advt.]

J. Sessions & Sons, Docks, Gloucester, Manufacturers of ENAMELLED SLATE and MARBLE CHIMNEY-PIECES, URINALS, &c. WELSH ROOFING SLATES direct from Quarries to any Station in the Kingdom. Manufacturers of Joinery & Mouldings. [Advt.]

B. J. Hudson & Sons,
MAHOGANY, WAINSCOT, and FANCY
WOOD MERCHANTS.
Immense quantities of thoroughly-seasoned Woods, specially adapted for Cabinet and Joinery purposes. Also Veneers of every description always in stock, at lowest possible prices.
WHITFIELD-STREET, LONDON, W., and
GREAT PETER-STREET, S.W.

MICHELMORE & REAP,
Manufacturers of

CHARLES COLLINGE'S PATENT

COLLINGE'S PATENT HINGES,
LEVER, SCREW, & BARREL BOLTS,
Self-Acting "FALL DOWN" GATE STOPS,
and IMPROVED GATE FITTINGS of every Description.
36a, BOROUGH ROAD,
LONDON, S.E.
Discount to Builders.
Illustrated List two stamps.

Roofing Felts.—F. Braby & Co.
INODOROUS, SARKING, SHEATHING, AND HAIR FELTS, KEPT ALWAYS IN STOCK. MANUFACTURERS OF PERFORATED ZINC, PERFORATED COPPER, AND PERFORATED IRON, IN VARIOUS DESIGNS AND GAUGES.

Wrought Iron Tanks.—F. Braby & Co.
PAINTED AND GALVANISED, OF IMPROVED MANUFACTURE.

Corrugated Iron.—F. Braby & Co.
GALVANISED AND BLACK IN ALL GAUGES KEPT IN STOCK. ZINC WORK OF ALL KINDS.

FITZROY WORKS, 356 to 360, EUSTON ROAD, LONDON.
Hatton Garden, Liverpool: Great Clyde Street, Glasgow; and at Cyprus.